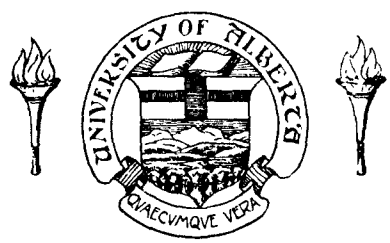
NORTH WEST TERRITORIES AGRICULTURAL REPORTS

1898-1904



ANNUAL REPORT

OF THE

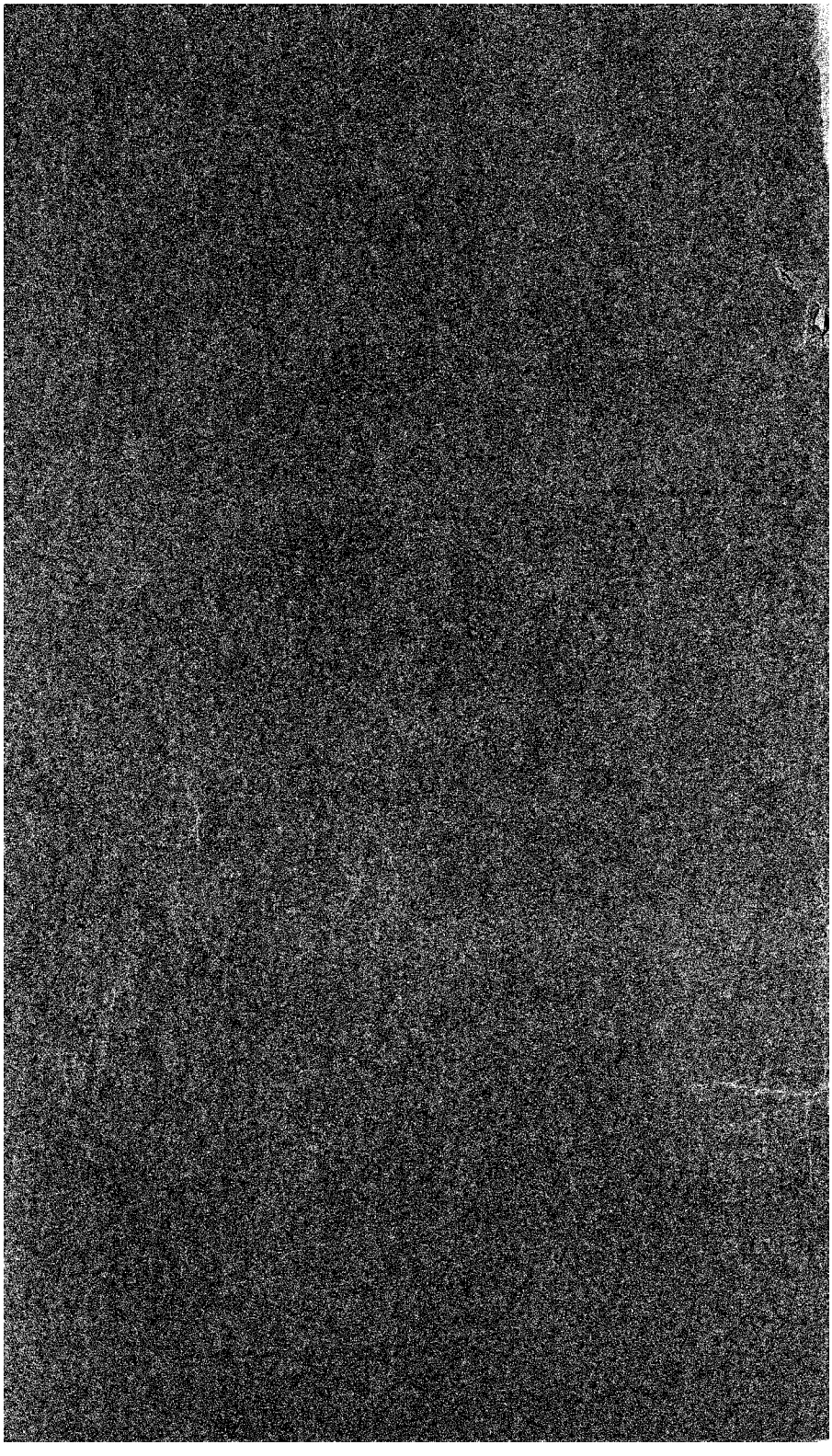
DEPARTMENT OF AGRICULTURE

FOR THE

NORTH-WEST TERRITORIES

1898

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY



ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

OF THE

NORTH-WEST TERRITORIES

1898

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY

REGINA
JOHN ALEXANDER REID, Queen's Printer for the Territories
1899

DEPARTMENT OF AGRICULTURE,
Regina, March 1, 1899.

To His Honour AMEDEE EMMANUEL FORGET,
Lieutenant-Governor of the North-West Territories.

SIR,—

I have the honour to submit herewith the Annual Report of the Department of Agriculture for the year 1898.

I have the honour to be, Sir,

Your obedient servant,

G. H. V. BULYEA,

Commissioner of Agriculture.

G. H. V. BULYEA, Esq., M.E.C.,
Commissioner of Agriculture.

SIR,—

I herewith have the honour to submit the first annual report of this department. The work of the department was for a number of years conducted in connection with the Public Works and other branches of the Executive Committee. On the formation of the Executive Council, it was transferred to the Department of the Territorial Secretary and placed under the charge of Mr. R. B. Gordon. On the 18th December, 1897, Mr. John A. Reid, Clerk of the Executive Council, was appointed Deputy Commissioner of Agriculture, the intention being that the work should be carried on in connection with his office, until the volume and importance of the same warranted the organisation of the department on an individual basis. The work, however, increased with such rapid strides, that in the month of June last, it was deemed advisable to divorce the same entirely from the office of the Executive Council and I was temporarily placed in charge as chief clerk, offices in the Public Works building being placed at the disposal of the department. The estimates submitted to the House during the following session contemplated the complete organisation of the department and on the 13th October I was appointed deputy head.

AGRICULTURAL STATISTICS.

It may be said that the compilation of statistics bears the same relation to the administration of a country as an intelligent system of book-keeping to the management of any business. In addition to the value of statistics as showing the progress and development of the country as years go on, this work possesses an actual direct value to the farmer. In fact, were it not so, the advisability of the expenditure of public money in this direction might with propriety be questioned. Lack of statistical information invariably creates instability of markets. The middleman must purchase at safe prices and the result always is that any loss is borne by the producer.

In his evidence before the select committee appointed by the House of Commons to obtain information as to the agricultural interests of Canada in 1884, Mr. Archibald Blue, at that time chief of the Statistical Bureau of the Ontario Department of Agriculture, stated as follows, in reply to the question as to whether he had noticed that the agricultural community benefits from statistical work, and in what way he expected it chiefly to be of service to them :

I think it may benefit them in a variety of ways. It gives to the whole people—producers, dealers and consumers—a knowledge of the extent of supply and demand in the country, and in that way it serves to check the operation of speculators. There are a few leading men in the country who buy up nearly the whole produce of the country. They have their agents, their buyers, all over the country. They are constantly in receipt of information from them, as to the condition and prospect of the crop, and they are able, at the earliest possible time, to avail themselves of the information collected in this way. It is not an uncommon thing for them to buy up nearly the whole available surplus of produce before the farmers generally have an opportunity of knowing whether or not there is an excess in the supply, or whether the tendency of prices is upwards or downwards. We collect this information, and as we have as wide a circulation, at least, as the dealers have, we are able to give it to the people just as early as the dealers can procure it. To give you an instance of what may be done, I would refer to the crop reports of the

United States Bureau for 1873. You may remember that in 1873, as in 1888, the fall frosts were unusually early and severe, and they destroyed to a large extent the corn crop of the country. The report of the United States Bureau of Agriculture showed that the extent of damage done in that year was at least 125,000,000 bushels of a loss to the corn crop, and almost immediately after the appearance of that report the price of corn went up 20 cents. In that case, the farmers got the benefit of the rise, and not the speculators, and I hold that it is the farmers, the producers, the men who earn, who should receive the full advantage of high prices, and not the speculators. The consumers will not be benefitted in any way by the speculators buying low, for the speculators and the dealers will sell high if the market justifies it. Then in the year 1879 again, there was a large crop of wheat in the United States, and the leading dealers in Chicago and New York, having been posted as to the condition of the wheat in Europe, and knowing that the crop was a failure there, bought up nearly the whole supply of the wheat in the United States—the fall wheat at 90 cents per bushel, and almost immediately the price rose to $1.20. A similar attempt was made in 1881, but it was foiled through the efforts of the State Bureaux, several of which in the meantime had been established—in Illinois, Ohio, Michigan and several other States. Through the information which those reports were able to give to the public, the farmers were induced to hold their grain, and they sold it at the highest price. The Secretary of the Ohio State Board of Agriculture, who was at the head of the Bureau of Crop Reports there, estimates that in this way the farmers of the State got an increased value on their wheat crop, amounting to not less than $10,000,000. Of course, if this information had not been communicated to the people—if it had been collected and held by the large grain dealers for their own special use—that profit would have gone into their pockets. As it was, it was distributed among the farmers, and it enabled them to carry on improvements on their farms, to put up buildings, and drain their lands, and so improve their conditions. I remember—I think it was in the same year, 1881—that there was a failure in the bean crop in our own country, in the County of Essex especially, where the bulk of the bean crop in Ontario is grown. The dealers knew this. There was also a failure in the same crop in Michigan and New York. They set to work and bought up nearly the whole of the bean crop that year before it was harvested, at prices ranging from $1.25 to $1.75 per bushel, and in less than a month beans were quoted in the Detroit market at $3 per bushel. Those dealers made a profit and the farmers lost it. We seek to give to the public the information which only grain dealers and speculators generally are able to procure for themselves, and which they do procure at a very large cost.

It is not, however, sufficient that information should be compiled regarding the output of the various classes of agricultural products. The labour of the statistical branch should go farther and to some extent gather information regarding the probable demand for agricultural surpluses in adjoining markets with a view to the promotion of interprovincial and foreign trade, and in respect to the latter comes in the value of statistical information relating to foreign countries. Foreign statistics is a subject handled entirely by the federal authorities, but it is probable that valuable work could be done through this department in establishing connections throughout the mining districts of the West, with a view to estimating the probable demand for Territorial products. One matter has come to my notice in the course of recent years which amply demonstrates the value and necessity for work of the nature under discussion. It has been the practice in the past for dealers in agricultural products for western markets, to buy up the bulk of the oat crop along the line of the Calgary and Edmonton Railway. In a great many cases oats have been purchased as low as 12 cents per bushel, and the experience has usually been that by the time an approximation of the supply and demand could be arrived at, the value had risen materially. The same conditions apply as regards potatoes and hay. If estimates could be formed of our own crop, as well as that of the Province of Manitoba, our chief competitor, which is always available fairly early in the season, and reliable information could also be obtained as to the probable demand for these articles in the Kootenay District, and this information placed before our farmers early in the season together with a forecast of our own production, an undertaking which could only be successfully handled by the Government, I think I am safe in stating that an increase of revenue to a large number of Territorial farmers would be the result.

The difficulties standing in the way of the compilation of reliable statistical information in the Territories are many and varied The problem in all other provinces of Canada is, comparatively speaking, a simple one, owing to the fact that the clerks of municipalities, county assessors and other officials employed in connection with organised portions of the country, are in a position to furnish reliable information which often has to be obtained for purposes of taxation, and are as a rule men of business experience, who can be relied upon to respond promptly to departmental communications. In the North-West Territories, however, the conditions are altogether different. The only organisation through which it would be at all feasible to work, is the Local Improvement District and as yet the same is not extensively enough introduced to be of any practical value in connection with our statistical work. It must, therefore, be admitted, that it will be difficult to obtain reliable results from any attempt in the direction of estimating the growing crop. I am not in any event at all impressed with the expediency or utility of such estimates too early in the season. It stands to reason, that unless correctness is fairly approached, they are calculated to do more harm than good by creating undue and uncalled for disturbances in the market. Estimates of the growing crop are made in nearly all the provinces in Canada in the various stages of the growth, but I have yet to learn that much credence is placed in these prophesies until the crop has nearly reached maturity. The most useful work which we can hope to do in the Territories at present, is to deal with threshing machine operators, and here again, we encounter the apathy of the people directly interested. Another serious drawback to our statistical work is the apparent reluctance of the Canadian Pacific Railway authorities to furnish figures with which to check our calculations and conclusions.

The system adopted with a view to obtaining statistical information regarding the year's crop, was to obtain the actual results of threshing machine operators. There can be no doubt that figures of almost absolute correctness could be obtained from these individuals. Every bushel of grain raised must sooner or later be threshed, and they are practically the only people in a position to assist the Department at the present time, and it is, therefore, of the utmost importance to enlist their co-operation. Early in the season a circular letter was sent to a very large number of representative men in every district of the Territories, in which they were asked to furnish the Department with a list of names and addresses of threshing machine operators in their various localities. After considerable correspondence, what is thought to be a complete return was received in this Department and the names were indexed alphabetically, so as to avoid repetition. During the month of December the following circular letter was addressed to all operators of threshing machines then records of the Department.

SIR,—One of the most important duties of the Agricultural Department is the collection of statistics; but very few people appreciate the importance of the work, outside of the general interest attached to the same as showing the development of the country from year to year. The absence of statistical information has, however, a direct influence on the markets of the North-West, particularly upon oats and barley. When the quantity available is uncertain, the dealer, in self-protection, buys on the safe side, in anticipation of a possible surplus, and the farmer, in the absence of statistical information, is unable to judge whether the price offered him for his produce is a fair one or too low, usually sells at "market price," whatever it may be, and whether the crop is full or short, the demand great or small, the farmer will invariably be the loser.

It is now the desire of the Department to counteract, as far as possible, this undesirable influence of uncertainty by the publication of reliable crop statistics every fall, and the Commissioner would be glad to have you co-operate with the Department in its efforts to assist the farmers of the North-West Territories. A blank form of return is hereto

attached. Kindly state, in the proper columns, the results of your season's threshing, enclose it in the attached envelope and mail it to this Department. In case you have any objections to disclose the details asked for, I may say that the same will be treated as strictly confidential and individual results will not be made public in any shape or form.

As it recognised that "every service has its value," I am directed by the Commissioner to inform you that upon receipt in this Department of the enclosed form properly filled out, your name will be forwarded to the publishers of either The North-West Farmer or The Farmers' Advocate, the leading agricultural papers of the West, according to your selection, and your subscription to the same will be prepaid by the Government to the 1st January, 1900, and your name will also be placed on the list to receive all reports and bulletins issued by this Department, from time to time.

Some sixty per cent. complied promptly with the request of the Department and on the 20th of March a second appeal was sent to those who had not replied to the communication in question. This brought forth another twenty to twenty-five per cent of replies, thus leaving ten to fifteen per cent. to hear from. Realising that unless our returns were almost complete, the information in question would be of no practical value, letters were addressed to a number of parties residing in the districts from which no returns had been received, asking them to interest themselves in the matter, with a view to obtaining the balance of the returns. This in the majority of cases had the desired result, and at the present time there are only 23 out of 368 to hear from.

In view of the enormous area of land comprised within the Territories and the improbability of obtaining complete returns, it was found advisable to divide the country up into districts for statistical purposes, so that the complete figures could be given for those portions of the country, at least, from which full returns had been received. The following is a list of the said districts with a description of the area covered by each :

District No. 1. (South-east Assiniboia)—Comprises that portion of the country lying north of the international boundary, south of the southerly limit of Township 10, west of the westerly boundary of Manitoba and east of the Third Meridian.

District No. 2. (South-west Assiniboia)—Lies west of District No 1 and east of the easterly boundary of the provisional district of Alberta, south of the southerly limit of Township 10 and north of the international boundary.

District No. 3. (East Central Assiniboia)—Lies west of the westerly boundary of Manitoba, east of the easterly boundary of Range 7 west of the Principal Meridian, south of the southerly boundary of Township 20 and north of District No. 1.

District No. 4. (Central Assiniboia, No. 2)—Lies north of District No. 1, west of the westerly boundary of Range 6 west of the Second Meridian, east of the westerly boundary of Range 16 west of the Second Meridian and south of the southerly boundary of Township 24

District No. 5. (Central Assiniboia No. 1.)—Lies north of District No. 1, west of District No. 4, south of the southerly boundary of Township 24 and east of the Third Meridian.

District No. 6. (West Central Assiniboia)—Lies north of District No. 2, west of District No. 5, east of the easterly boundary of the provisional District of Alberta, and south of the southerly boundary of Township No. 24.

District No. 7. (North-east Assiniboia)—This district comprises the country contiguous to the Manitoba and North-Western Railway. It is bounded on the east by the westerly boundary of Manitoba, on the north by the southerly boundary of the provisional District of Saskatchewan, on the west by the westerly boundary of Range 12 west of the Second Meridian, and on the south by a line commencing at the Mani-

toba boundary south of Township 20, thence due west to the easterly boundary of Range 7 west of the Second Meridian, thence due north to the south-easterly corner of Township 24 Range 7, thence west to the easterly boundary of Range 13 west of the Second Meridian.

District No. 8. (North Central Assiniboia)—Lies south of the southerly boundary of the provisional District of Saskatchewan, west of District No. 7, east of District No. 9, and north of the northerly boundary of Township 23.

District No. 9. (North-west Assiniboia)—Lies south of the southerly boundary of the provisional District of Saskatchewan, west of District No. 8, north of District No. 6 and east of the provisional District of Alberta.

District No 10. (East Saskatchewan)—Being that portion of the provisional District of Saskatchewan lying east of the easterly boundary of Range 10 west of Third Meridian.

District No. 11. (West Saskatchewan)—Being all that portion of the provisional District of Saskatchewan lying west of District No. 10.

District No. 12. (North Alberta)—Being all that portion of the provisional District of Alberta lying north of the northerly boundary of Township 44.

District No. 13. (North Central Alberta)—Lying between and including Townships 44 and 37.

District No. 14. (Central Alberta)—Lying between Townships 36 and 29 inclusive.

District No. 15. (South Central Alberta)—Lying between Townships 20 and 28 inclusive.

District No. 16. (South Alberta)—Being all that portion of the provisional District of Alberta lying north of the international boundary and south of the southerly limit of Township 20.

A tabulated statement showing the results of our returns for the various districts, as well as a schedule showing an estimate covering the returns not yet to hand, with a recapitulation of the whole, are herewith attached and furnishes the most concise and satisfactory method in which to convey the information gained. Owing, however, to this being the first year in the history of the Territories for which statistical information has been compiled and to the consequent absence of previous data upon which to base and check our calculations, I have thought it well not to invest our figures as to the result of last season's grain output with final official endorsation. As reliable an estimate of agricultural operations during the year as our information will enable us to calculate has been made which, however, should not be accepted as absolutely correct.

An attempt may with safety be made during the coming summer to deal in a very general way with estimates or probabilities of the growing crop. If two or more well informed correspondents are secured in each district, who are able to report to the Department from time to time as to the condition of the crop in comparison with that of the past year, that is, dealing wholly with percentages, it is possible that our conclusions based on these reports may be of some value; but it will doubtless require two or three seasons' experience to make estimates of even approximate correctness. As before stated, the statistical feature of our work in the Territories is unique in its nature, and we are, therefore, left more or less to work out our own salvation in the matter.

I.—CROP STATISTICS OF 1898

Compiled from Returns furnished by Threshers.

A.—WHEAT.

DISTRICT.	NO. HEARD FROM.	BUSHELS THRESHED	ACREAGE.	YIELD PER ACRE.	PER CENT. INJURED
1. South-east Assiniboia	32	689,962	45,997	15.80	11
2. South-west Assiniboia	4	46,210	1,925	24.00	1
3. East Central Assiniboia	53	1,100,589	68,777	16 20	2
4. Central Assiniboia, II.	63	1,397,033	77,626	18.00	2
5. Central Assiniboia, I	56	884,244	42,107	21.03	2½
6. West Central Assiniboia	5	500	28	18 75	1
7. North-east Assiniboia	11	148,356	11,412	13 27	24
8. North Central Assiniboia	.....	No returns	.....	.....	.....
9. North-west Assiniboia	.....	No returns	.....	.....	.....
10. East Saskatchewan	24	272,568	16,058	17 65	11
11. West Saskatchewan	6	14,049	702	20 33	8
12. North Alberta	54	546,273	21,010	26.10	15½
13. North Central Alberta	5	27,432	1,246	22 25	2
14. Central Alberta	7	13,034	510	26 00	1
15. South Central Alberta	12	64,205	2,918	22 18	6½
16. South Alberta	13	47,608	1,983	24 00	5
	345	5,252,063	292,290		

B.—OATS.

DISTRICTS.	NO. HEARD FROM.	BUSHELS THRESHED	ACREAGE.	YIELD PER ACRE.	PER CENT. INJURED
1. South-east Assiniboia	32	259,443	13,655	19 61	25
2. South-west Assiniboia	4	17,840	482	37.50	nil
3. East Central Assiniboia	53	228,496	8,160	28 28	1
4. Central Assiniboia, II.	63	363,196	14,118	25 72	1
5. Central Assiniboia, I.	56	273,871	11,410	24 20	½
6. West Central Assiniboia	5	8,000	160	51 75	nil
7. North-east Assiniboia	11	210,582	7,800	27.00	33
8. North Central Assiniboia	.....	No returns	.....	.....	.....
9. North-west Assiniboia	.....	No returns	.....	.....	.....
10. East Saskatchewan	24	122,117	6,567	18 69	17
11. West Saskatchewan	6	16,152	538	30 66	8
12. North Alberta	54	971,438	21,118	46 53	16
13. North Central Alberta	5	134,853	3,290	41 25	1
14. Central Alberta	7	113,919	2,476	46 50	5
15. South Central Alberta	12	156,194	4,221	37.41	¼
16. South Alberta	13	164,206	3,649	45 00	4
	345	3,040,307	97,644		

I.—CROP STATISTICS.—*Continued.*

C.—BARLEY.

DISTRICT.	NO. HEARD FROM.	BUSHELS THRESHED	ACREAGE.	YIELD PER ACRE.	PER CENT. INJURED
1. South-east Assiniboia	32	38,686	1,682	23.77	nil
2. South-west Assiniboia	4	200	10	20.00	nil
3. East Central Assiniboia	53	36,100	1,570	23 33	4
4. Central Assiniboia, II	63	23,210	1,184	19.60	nil
5. Central Assiniboia, I.	56	14,108	743	19.03	nil
6. West Central Assiniboia	5	1,550	42	38.33	nil
7. North-east Assiniboia	11	7,174	420	17.20	16
8. North Central Assiniboia	.....	No returns	.....	.....	.....
9. North-west Assiniboia	.....	No returns	.....	.....	.....
10. East Saskatchewan	24	47,810	2,177	22.00	16
11 West Saskatchewan	6	1,915	87	22.00	8
12. North Alberta	54	176,903	5,706	31.02	17½
13. North Central Alberta	5	17,268	617	28 75	4½
14. Central Alberta	7	13,653	390	34.83	nil
15. South Central Alberta	12	14,510	518	28.00	10
16. South Alberta	13	15,752	492	32.00	nil
	345	408,819	15,638		

II.- ESTIMATES OF UNREPORTED THRESHING, 1898.

DISTRICT NO.	THRESHERS NOT HEARD FROM.	WHEAT.		OATS.		BARLEY.	
		BUSHELS.	ACRES.	BUSHELS.	ACRES.	BUSHELS.	ACRES.
1	4	37,992	2,533	16,776	729	4,832	200
3	2	41,530	2,595	8,622	309	1,362	59
4	2	63,284	2,722	16,053	440	387	20
5	1	15,790	752	4,890	204	252	13
7	2	26,972	2,075	38,286	1,418	1,300	76
10	1	11,357	944	5,088	273	1,992	98
12	8	80,928	3,112	143,920	3,128	26,200	845
14	1	1,862	71	16,285	354	1,950	57
15	2	10,700	486	26,032	578	2,418	86
	23						

NOTE.—The numbers in left hand column correspond with those in Table I.

I.—CROP STATISTICS.—*Continued.*

III.—WHEAT.

DISTRICT NO.	WHEAT. RETURNS.	WHEAT. ESTIMATE.	TOTAL.	ACREAGE. RETURNS.	ACREAGE. ESTIMATE.	TOTAL.
1	689,962	37,992	727,954	45,997	2,533	48,530
2	46,210		46,210	1,925		1,925
3	1,100,589	41,530	1,142,119	68,777	2,595	71,372
4	1,397,033	63,284	1,460,317	77,626	2,722	80,348
5	884,244	15,790	900,034	42,107	752	42,859
6	500		500	28		28
7	148,356	26,972	175,328	11,412	2,075	13,487
8	No returns.					
9	No returns.					
10	272,568	11,357	283,925	16,058	944	17,002
11	14,049		14,049	702		702
12	546,273	80,928	627,201	21,010	3,112	24,122
13	27,432		27,432	1,246		1,246
14	13,034	1,862	14,896	501	71	572
15	64,205	10,700	74,905	2,918	486	3,404
16	47,608		47,608	1,983		1,983
	5,252,063	290,415	5,542,478	292,290	15,290	307,580

NOTE. The numbers in left hand column correspond with those in Table 1.

IV.—OATS.

DISTRICT NO.	OATS. RETURNS.	OATS. ESTIMATE.	TOTAL.	ACREAGE. RETURNS.	ACREAGE. ESTIMATE.	TOTAL.
1	259,443	16,776	276,219	13,655	729	14,384
2	17,840		17,840	482		482
3	228,496	8,622	237,118	8,160	309	8,469
4	363,196	16,053	379,249	14,118	440	14,558
5	273,871	4,890	278,761	11,410	204	11,614
6	8,000		8,000	160		160
7	210,582	38,286	248,868	7,800	1,418	9,218
8	No returns.					
9	No returns.					
10	122,117	5,088	127,205	6,567	273	6,840
11	16,152		16,152	538		538
12	971,438	143,920	1,115,358	21,118	3,128	24,246
13	134,853		134,853	3,290		3,290
14	113,919	16,285	130,204	2,476	354	2,830
15	156,194	26,032	182,226	4,221	578	4,799
16	164,206		164,206	3,649		3,649
	3,040,307	275,952	3,316,259	97,644	7,433	105,077

NOTE. The numbers in left hand column correspond with those in Table 1.

I.—CROP STATISTICS.—*Continued.*

V.—BARLEY.

DISTRICT NO.	BARLEY. RETURNS.	BARLEY. ESTIMATE.	TOTAL.	ACREAGE. RETURNS.	ACREAGE. ESTIMATE.	TOTAL.
1	38,686	4,832	45,518	1,682	200	1,882
2	200	.....	200	10	.....	10
3	36,100	1,362	37,462	1,570	59	1,629
4	23,210	387	23,597	1,184	20	1,204
5	14,108	252	14,360	743	13	756
6	1,550	.....	1,550	42	.....	42
7	7,154	1,300	8,454	420	76	496
8 } 9 }	No returns.	.....	.....	.....	.....	.....
10	47,810	1,992	49,802	2,177	98	2,275
11	1,915	.....	1,915	87	.....	87
12	176,903	26,200	213,103	5,706	845	6,551
13	17,268	.....	17,268	617	.....	617
14	13,653	1,950	15,603	390	57	447
15	14,510	2,418	16,928	518	86	604
16	15,752	.....	15,752	492	.....	492
	408,819	40,693	449,512	15,638	1,454	17,092

NOTE.—The numbers in left hand column correspond with those in Table I.

VI.—RECAPITULATION.

CROP.	BUSHELS.	ACREAGE.	AVERAGE YIELD PER ACRE.
Wheat.....	5,542,478	307,580	18 01
Oats.....	3,040,307	105,077	28.93
Barley.....	449,512	17,092	26.29
	Total Acreage.....	429,749	

FINANCIAL STATISTICS.

It is regrettable that, after various attempts, I have failed to discover any means by which statistical information can be obtained as to the amount of farm mortgages and average rate of interest paid in the North-West Territories. There can be no doubt whatever that the average rate of interest on such loans is not less than between eight per cent. and ten per cent. per annum; vastly higher than the nature of the security and the profits of the average farm would appear to warrant. In view of the large amount of mortgaged property in the West occasioned by the scarcity of ready money, this is one of the most serious drawbacks under which our settlers are at present labouring. It would be interesting to figure out the effect of a general refunding of present mortgages, coupled with a reduction of two per cent. to three per cent. in rate of interest of new loans.

Legislation was provided in the Province of British Columbia dealing with mutual credit associations. I understand, however, that the public

has not availed itself of the provisions of this Act; in the first place, owing to the cumbersome procedure, and secondly, because the farmers, as a class, have not the business training required to organise under the Act. The well known transient nature of the western population also operates against such schemes.

The land credit association scheme originated by Raiffeisen of Flammerfeld has been a most pronounced success. The principle involved is the pledging of the assets of the entire association and of all the members of the society, as security for the obligations of the society. The funds of the society are lent to members requiring financial assistance. As bearing upon the popularity and sound financial standing of these associations I shall quote a translation of an extract from the Leipzig Tageblatt:

It has, above all, been the aim of the association to assist the small farmers, and among the 13,461 loans granted, there are 11,537 items to this class, the highest amounting to 20,000 marks ($4,760).

The loans granted in 1895 were at the rate of 49.87 per cent. of the value of the estates mortgaged, without regard to buildings on the estates.

The extraordinary favour with which the borrowing public supported the association is owing to two causes, viz., (1) the advantage of the redeemable loans, which are appreciated more and more, for the borrower may at any time pay his debt to the association in, or by the purchase of mortgage certificates of the association, while the association can at no time demand payment of the debt (as long as the interest is paid), not even in the most unfavourable times, nor can it claim a higher rate of interest on its loans than it pays to the holders of the mortgage certificates.

There are now in circulation 172,935,350 marks ($41,158,861.33).

The buildings, furniture, etc., valued on the books of the association at 644,700 marks ($153,438.60) at the close of 1894 have been sold to the postal authorities for 900,000 marks ($214,200). Of this, 600,000 marks ($142,800) is placed to the credit of immovables of the association, 158,000 marks ($37,604) are credited to the Mehnert fund, 100,000 marks ($23,800) for building, and 42,000 marks ($9,996) furnishing.

The net proceeds, including 153,368 marks ($148,577.93). Of this sum the special reserve fund receives 30,000 marks ($7,140), the pension fund 30,000 marks ($7,140) and, furthermore, a dividend of five per cent. shall be declared on member's stocks, which amounted, at the time of settlement of accounts, to 8,394,846 marks ($1,997.973.35).

A land bank system was introduced in France, known as the Credit Foncier, which, however, is not similar to the Saxony organisation, being rather on the line of a joint stock company with a limited credit. It is under government supervision.

In Switzerland, the state furnishes the capital of the Mortgage Bank of the Canton of Berne. Agricultural credit banks have also been established in Italy, Roumania, and other portions of Europe.

An elaborate system of government advances to settlers was inaugurated in New Zealand in 1894 and has met with some success.

If a scheme is finally devised by which machinery is provided for the furnishing of cheap money to the farmer, it will in all probability be found not to assume the shape of a utopian government undertaking, but rather take the form of a business-like proposition, having in view a combination of the united credit and security of farming communities on principles of co-operation.

AGRICULTURAL EXPERIMENTS.

The prosecution of a thorough agricultural survey in the early history of colonisation is a matter of vital importance. Much useless expenditure of time, money and energy may be saved to the farmer by placing before him such established facts respecting the success or failure of any particular grain, plant, seed, or method of cultivation in his locality as will guide him to avoid the failures and pro-

fit by the successes. The principle involved in carrying on such experiments is now endorsed by all progressive countries, and vast sums of money are devoted to these investigations. Individual effort is of no avail. It is frequently as important to demonstrate failures as successes, and few would devote time, money and skill to such undertakings without substantial government aid.

The North-West Territories occupy a unique position from an agricultural standpoint. There is not a state or province on the whole continent of America containing within its boundaries so many varieties of soil and subject to such a variety of meteorological and other conditions influencing plant growth. Its inland situation is responsible for its erratic climate, and the advisability of conducting efficient experimental work in each district of uniform climate and soil, economical enough to admit of judicious multiplication, is apparent.

Scientific research on a large scale is being conducted by the Federal government at the central experimental farm at Ottawa, at Brandon and at the Indian Head farm. But in order to bring home to the farmer, residing probably hundreds of miles from these institutions, the valuable conclusions reached, it would be well to advance one step further and establish an experimental station in each such district of the Territories of uniform climate and soil conditions. Arrangements might be made with the best man available in each district to devote from ten to twenty acres of his property, which should be conveniently situated, to experimental work, and to conduct this work at a stated sum per annum. Experience in a number of other agricultural countries would seem to show beyond doubt, that most successful experimental work can be conducted without the government actually acquiring ownership of the land upon which such experiments are carried on, or incurring the expense of procuring an extensive plant. This work, it is found, can be performed most economically on the principle involved in the ordinary public works and other government contracts, and without objectionable capital expenditure and permanency of location. I do not mean to assert that intricate scientific investigations could be prosecuted under such conditions, but the important problems facing the farmer of the Territories to-day are of such a nature as to require practical rather than profound scientific investigation. Although I would be sorry to attempt to detract in the slighest from the value of the latter, I am of the opinion that in view of our present sparse settlement, undeveloped state and limited revenue, we can well afford to rest content with a system of experimental or demonstration stations on the lease system, devoted to the merest A B C of agricultural inquiry and leave the question of extensive experimental farms until we are in a position to establish agricultural colleges with a proper scientific staff, without which such farms must of necessity be incomplete. Precautions, however, can be taken to safeguard the public interest in making any arrangements regarding such leases. Only thoroughly reliable men should be approached who are well known in their respective districts and who have established for themselves reputations as farmers and stock breeders. A five-year agreement might be entered into, subject to termination at any time, upon reasonable notice on the part of the department. Any experimental work in the way of tree planting, would to some extent constitute a permanent improvement on any farm, and the longer the period covered by such experimentations at one point, the more reliable the result, hence the desirability of making the remuneration for such services as liberal as the exigencies of the

case would seem to demand. As an additional safeguard it might be well to secure an option to purchase any such lands at the termination of the lease. That such able men can be procured in every locality where the government might in time find it desirable to initiate the work, cannot for a moment be doubted.

Only the varieties which previous data indicate could be grown should be tested. Once it has been demonstrated that a certain variety of cereals, trees, etc., meets these conditions, arrangements might be made to have a large area put under crop with the same, and the product thereof sold to applicants in the district, at a price and in quantities to be regulated by the department, and thus establish in each district a distributing station for the introduction of improved varieties of the seeds and plants best suited for each locality, which should be one of the most important missions of such stations.

It cannot, of course, be expected that a scheme of this nature could be successfully worked out within a short period. It would be safer to initiate the work in one or two localities and extend it along lines which future experience teaches can be safely followed.

Nearly every county in Great Britain is famed for some peculiar variety of live stock brought to the greatest state of perfection there, chiefly through the congeniality of soil and environments. It might, in years to come, be one of the most important missions of such stations to ascertain which peculiar variety or varieties of live stock are especially suited for and would lend themselves readily to the greatest development in the district served by each one. When such a scheme has been perfected, it would be the means of furnishing agencies of the government in every representative section of the Territories, through which intelligent and systematic aid and direction could be extended towards encouraging the raising of the most profitable and suitable breeds of live stock.

The necessity for such local experimental or demonstrative work, in addition to the more exhaustive scientific investigations carried on in expensive central experimental institutions, has long ago been recognised by all the progressive agricultural countries and states of Europe and America. In France some three or four thousand demonstration fields in various sections of the country are miantained by the government in addition to one central and a large number of substations, at a comparatively small outlay. Germany, Belgium and Denmark are also greatly interested in such work. The Province of Ontario has thirteen horticultural experimental stations, costing the government about $200.00 per annum. There is now a strong movement on foot in Great Britain to introduce local agricultural experiments. In fact, it is everywhere admitted that a system of experimental institutions proper, is incomplete without substations in each representative locality.

The following is a quotation from the Seventh Annual Report of the New York Agricultural Experiment Station:

> In a state embracing so wide an extent of territory as does the Empire State, with its differences of soil and climate, and with such great diversity of agricultural interests, it must naturally appear that any experimental station, wherever located, is largely a local institution, and that its results, however valuable and however clearly established, are necessarily limited to the conditions obtaining at the locality where such experiments are being conducted.
>
> It is true that the farm belonging to the experimental station closely resembles in character of soil many thousands of farms within the state, it being mainly composed of clay, clay and gravelly clay loam, so that methods of culture here found best may be, almost without modification, applied to many other localities, and the results here obtained may be confidently predicted in such similiar localities. But in view of the fact that this is a state institution and its benefits may be justly demanded by every agricul-

tural interest of the state, it appears most desirable that in the near future there should be established in several different sections of the state branch experiment stations for the purpose of determining the results which are produced by differences of soil and climate. Such work could and would be conducted by intelligent farmers in their several sections, under the direction and supervision of the central station, and in this way the useful work and influence of the station could be widely distributed at a very slight additional ex ense.

In the report of the president of the Ontario Agricultural College for 1896 (which institution conducts agricultural investigations at Guelph, and a number of horticultural substations under the auspices of the provincial authorities), speaking about the result of testing foreign varieties and the value of the work generally, Professor Mills states:

In this way some excellent foreign varieties have been introduced, tested and distributed throughout the Province—varieties which yield from six to eight bushels per acre more than any other varieties previously grown. In oats and barley alone, the varieties introduced and distributed by the experiment station have, within the last four or five years, paid to the Province a good deal more than the entire cost of the college for the last ten years.

In his evidence before the select committee of agriculture of the House of Commons, in 1884, Major General Laurie of Halifax, a noted agriculturist, states:

The climatic conditions are so dissimilar that experiments made in the drier atmosphere and steady winter of Ontario would be of comparatively small value to the lower provinces; but experiments conducted where the conditions of the season, temperature and rainfall are similar to those encountered by our farmers would be of great value. Our farmers are now more or less engaged in experiments but the labour is largely thrown away, as they have not the scientific knowledge to work out these satisfactory, and they often arrive at wrong conclusions. But if an experimental farm was established in their neighbourhood they could readily join in conducting these experiments, receiving instructions from the superintendent of the station as to the necessary conditions and points to which they should give attention, and these simultaneous experiments would be of more value than if conducted singly. It is very desirable that branch stations should be established. Our Dominion is very large, and the climatic conditions are very dissimilar, so that a central station without the branches would not bring all the benefits we desire. It would, without doubt, confer great advantages, but it should be supplemented by branch stations.

In his evidence before the same committee, Professor Penhallow, who has had the advantage of pursuing agricultural investigations in the United States, Japan, France, Belgium and other continental countries, and at that time held a chair in McGill University, states, respecting the proposed inauguration of experimental agricultural work in Canada:

I do not think the establishment of one farm for that work would be advisable, but I think it is an important work and should be carried on. If properly distributed throughout stations where that special work was required, it would be of the highest importance to the country at large.

While the chief object of experimental stations should be to carry on agricultural investigations and demonstrations, an important feature of the system would be the moral effect on the settler of the object lesson in the capabilities of his district, which would thus in time be within reasonable visiting distance of the great majority of farmers in the Territories, stimulating them to better methods, better materials, and greater efforts in the future, with a view to imitating the example before them.

The value of this work to the cause of immigration is also worthy of consideration. Too much importance can hardly be attached to having at a number of central points, easily accessible, throughout the Territories, plots from ten to twenty acres under intensive cultivation demonstrating the developments which the resources of each district is capable of. The object lesson would often convey to the minds of visitors the possibilities of the district, under surroundings and conditions of cultivation quite within the scope of any energetic and progressive farmer, and would ef-

fectually silence the "alarmist" who, through lack of enterprise and confidence, is chiefly instrumental in making new settlers dissatisfied with their lot.

Irrigation is necessary in the semi-arid portions of the country—which is estimated to include six and one-half million acres—for the successful growing of crops, and it cannot be disputed for a moment that every agricultural principle which has been established through series of investigations elsewhere, must be demonstrated over again under the influence of artificial watering before it is applicable in the south-western portion of the Territories. The introduction of new varieties of early maturing grains, grasses, trees, etc., lending themselves to the highest development under copious watering, within a comparatively speaking short season, is one of the problems to be solved here. Fortunes are invested in irrigation works and millions of acres depend upon artificial watering for the production of the fodder required to carry the enormous cattle herds of the West over severe winters, and to furnish feed every winter for calves and weak stock, and the interests at stake are well worthy of any encouragement which could be extended in this manner. There can be no reasonable doubt that the most pressing work awaiting the attention of the department in connection with agricultural experiments lies here. For years an agitation has been maintained to induce the Federal authorities to take up agricultural investigations under artificial watering, but, so far, nothing has been attempted in Canada along these lines. The argument is often raised that while there are still vacant lands available within the humid districts of the Territories, no reason could be urged in defence of expending any Government funds towards encouraging the reclamation and settlement of the arid portion. This, however, is but a very narrow view of the situation. In fact, it might with the same show of reason be held that steps should not be taken to enable the settlers in other districts to obtain a supply of water for domestic purposes where the same cannot be readily procured. The absence of water, whether for domestic or irrigation purposes, renders a farm equally useless. The reply of the irrigation farmer to such an argument would be that he is endeavouring to cultivate under natural rather than artificial conditions. Having water available in his ditch or resorvoir, he is enabled to employ it on his crop at such seasons of the year as experience has taught him are the most propitious to a favourable result. He is not at the mercy of the capriciousness of the weather. His contention would be that farmers cultivating without irrigation in any portion of the world where a water supply by gravity can be secured, are trusting solely to the bounty of nature, omitting to take such precautions as have in favored localities been placed within easy reach. The irrigator, on the other hand, controls his water supply and has, other things being equal, a crop assured beyond all peradventure. There is a large class of people in the United States who have farmed under irrigation in the State of Colorado and elsewhere and who would not under any consideration exchange an irrigated farm in a semi-arid or arid district for a farm where irrigation is supposed not to be required and probably could not readily be obtained. It is believed that the irrigated portion of the Territories will in time attract a large immigration from those states.

A proposal was received from The Calgary Irrigation Company in which that company offers to set apart a portion of the north half of Section 21 Township 23 Range 1 west of the Fifth Meridian, containing an area of sixty acres, for experimental work under government supervi-

sion. This plot is situated a little over four miles south of the City of Calgary, is bounded on the north by the Priddis trail, is less than half a mile off the main travelled trail of the district and adjoins Glenmore school house grounds on the east. The land in question forms part of the old Livingstone place, has been cultivated a number of years and has largely enjoyed immunity from hail and frost. The quality of the land, which has a light sandy soil with a sandy clay subsoil, appears to be typical of the neighbourhood. The company would enclose this area with a substantial fence and agree to construct all the ditches, gates, laterals and other surface work necessary for its successful irrigation, and would be prepared to give the government an option to purchase an area of eighty acres, including the sixty acres mentioned, at the expiration of a five-year lease, at a price to be fixed by arbitration, or to renew the lease on the terms of the present offer. The annual rental asked by the company is $120.00. Considering that before the department could take the land over, the company would have to incur a capital expenditure in fencing and preparing the surface of not less than $6.00 per acre in addition to the intrinsic value of the land, the rental asked cannot in any way be considered excessive, particularly when it is taken into consideration that an annual outlay will be required to maintain fencing, ditches and other improvements. The company further offers to supply the necessary water for irrigation purposes for the sum of $50 00 per annum, which represents less than $1.00 per acre and is, I believe, below the rate ordinarily charged in that district.

A further proposal was received from Mr. P. T. Bone, C.E., of Calgary, who is the managing director of The Calgary Irrigation Company, to operate such an experimental plot for the government under contract, in connection with the company's farm located on Section 21 above referred to, which is under his management, in which he expresses his readiness to comply with all reasonable requirements of the department. He would be willing to supply all team and handwork and superintendence necessary in connection with the management of the said experimental station and furnish for the use of the department all the implements required in the operation of such a station, of makes and styles approved by the department, including any small tools necessary in connection therewith. He would agree to prepare all reports, returns and bulletins as to the progress of the work, which may be from time to time required by the department and generally conduct such an experimental station as a public experimental farm. The remuneration asked by Mr. Bone in consideration of undertaking the management of this work and supplying the above mentioned implements, tools, teams, handwork, etc., is $630.00 per annum.

It is evident that the interests of The Calgary Irrigation Company and the department are identical in this matter. The irrigation company has over $50,000.00 invested in irrigation works in Southern Alberta and is vitally concerned in demonstrating to the general public the possibilities of the district under irrigation. If it is not able to make a success of a scheme such as that outlined, the company can offer no excuse for its existence. Its whole future prosperity depends entirely on educational work, such as contemplated, and upon the introduction of suitable varieties of seeds, etc., in the district. Mr. Bone, the managing director of the company, is a man eminently well qualified to undertake agricultural experimental work. He has made a study of the irrigation problem, which would, of course, represent the most important feature of our experimentations within the semi-arid district. He was brought up upon

a farm in Scotland, has farmed in Alberta and is fairly skilled in the theory and practice of agriculture as well as agricultural chemistry.

Taking everything into consideration, the proposals made by The Calgary Irrigation Company and Mr. P. T. Bone respectively, would appear to be the most favourable the department would be likely to receive on the subject and I would, therefore, recommend that they be accepted, and the work referred to initiated during the coming season.

It would be well if, during the coming year, steps could be taken to initiate experimental agricultural work at one or two points within the provisional district of Saskatchewan and in Northern Alberta. Next to the semi-arid district, investigations of the nature referred to, are, I think, most urgently required in the northerly portions of the Territories, where the conditions of soil and climate are so absolutely different from those prevailing where agricultural experiments have been carried on in the past.

METEOROLOGICAL.

A very large number of farmers in the North-West Territories do not realise the great importance to agriculture of meteorological and phenological observations. The influence of the climate upon plant growth is so well understood that it need only be slightly referred to here. In connection with the agricultural survey outlined under the heading of "Agricultural Experiments," a thorough climatic survey of the Territories with a special view to ascertaining the agricultural capabilities and drawbacks of each locality should be prosecuted, taking into account the variations in temperature during the growing season, the average period intervening between the last killing frost of spring and the first in the autumn, the average annual precipitation and other local conditions having a direct influence upon agriculture.

Having this in view, the Dominion authorities, who have full charge of the meteorological work all over Canada, were communicated with, in order to arrive at an arrangement whereby the voluntary rainfall and temperature stations might be very materially extended, and also to have the same placed under some sort of immediate supervision of the Department of Agriculture at Regina. I am pleased to be able to state, that the department met with the hearty co-operation of Mr. R. F. Stupart, the director of the Dominion meteorological service. His department had, at various times, made attempts at establishing further stations, but owing to the distance of their headquarters from the Territories, and the impossibility of keeping in close enough touch with the staff of observers, it had been found a very difficult matter to accomplish this object. The following is a list of the stations in operation when this department first interested itself in the matter: Alameda, Cannington, Grenfell, Indian Head, Qu'Appelle, Regina, Pense, Moose Jaw, Chaplin, Swift Current, Medicine Hat, Pincher Creek, Macleod, New Oxley, Calgary, Banff, Knee Hill, Edmonton, Duck Lake, Prince Albert, Cumberland House, Muscowpetung's Reserve.

After considerable correspondence additional observers were procured by this department at the following points:

Samuel Briggs, Wood Mountain, Assa.; G. G. Anderson, St. Mary's River, Alta.; H. J. Montgomery, Wetaskiwin, Alta.; Thomas Copland, Saskatoon, Sask.—Rain and temperature.

Fred W. Anglin, Saltcoats, Assa.; H. G. Graham, Langenburg, Assa.; G. G. Anderson, Stirling, Assa.; Henry George, M.D., Innisfail, Alta.; J. B.

Detwiler, Didsbury, Alta.; Sergt. Brymner, N.W.M.P., Coutts, Alta.—Rain only.

The total number of observation points now amount to 31, and the department at Toronto has expressed its willingness and anxiety to extend the number to at least 50. An attempt will consequently be made by this department to procure a number of observers between Calgary and Swift Current, along the Macleod line and between Regina and Saskatoon, as well as at a few points in Southern Alberta remote from the line of railway. It is also desired to open up at a number of points along the Manitoba and North-Western Railway and in other districts where settlement is at present going in.

Observation records are at present on file in the meteorological department, which in themselves constitute a most valuable guide as to the prospects for success of different varieties of plants, whose natural life-zones have been approximately defined in any particular locality in the Territories. These records are now being examined and abstracts will be made during the near future for reference.

I may say that in other provinces, the local departments of agriculture have co-operated with the meteorological department at Toronto in the same manner as is now being done here. The province of British Columbia particularly pays very deep attention to the meteorological feature in connection with agriculture. Monthly reports are now received from observers in this department, are tabulated here and forwarded to the head office at Toronto. As soon as the work has been perfected and the necessary facilities and arrangements made to have the observers report promptly, a telegraphic summary of the monthly reports will be sent by this department, so as to get the meteorological information from the North-West Territories incorporated in the weather map issued by the head office for the current month.

The following is a brief summary, extracted from the records of the Dominion meteorological service, of the temperature and precipitation conditions prevailing throughout the North-West Territories during each month of the past year:

January.—The weather was remarkably fine, calm and mild, the mean temperature being as much as 15 degrees above average in the western portion; the amount of cloud was also considerably below the average, and there was very little strong wind. All portions of the prairie had a covering of snow, which was, however, but from one to three inches in Southern Alberta and Western Assiniboia, and increased to about two feet in Eastern Assiniboia and Saskatchewan. In Alberta the chinook effect was noticeable during the greater part of the month and also extended over the larger portion of Assiniboia, and no very low temperature occurred. At Calgary the temperature rose above 32 degrees on fifteen days, and at Edmonton on eight days; and on but two days did not reach twenty degrees at the former station, and on four days at the latter. There were no marked periods of mild or cold weather. Further east, towards Prince Albert and Regina, there was a corresponding absence of disagreeable weather and extreme temperatures; the only really stormy days were the twenty-seventh and twenty-ninth when a good deal of drifting occurred. At Prince Albert the mercury fell either to zero or below on each of twenty-two days, but there were only four days in which it did not reach zero, and on one day it rose above 32 degrees. At Qu'Appelle the temperature fell below zero on sixteen days, but there were only two days when zero was not exceeded.

February.—The conditions of the weather in the Territories varied considerably, it being for the most part cold in Northern Alberta and Western Saskatchewan, whilst elsewhere the temperature was below the average. The snowfall was also heavy in northern and eastern districts, but comparatively light to the southward, it being greatest in Saskatchewan. In Alberta the coldest weather occurred between the fifteenth and twenty-third—20 degrees or lower occurring at Edmonton on five consecutive days. At this place the temperature rose above 32 on seven days and fell below zero on fourteen. At Calgary it rose above 32 on thirteen days and fell below on nine. At Qu'Appelle it rose to 32 or higher on three days and fell below zero on eighteen and continued below zero on two. At Prince Albert it did not rise above freezing point, and it fell below zero on twenty-one days. In Saskatchewan and Assiniboia there was a stormy period between the thirteenth and the twenty-third, when the snow was much drifted.

March.—During the first half of the month the weather was for the most part fine, and it was only moderately cold. This, however, was followed by some very low temperatures, thus bringing the mean of the month considerably below the average. Between the fourteenth and sixteenth a storm occurred when much snow fell and altogether the weather had a very wintry appearance after these dates. The prairie trails were drifted and heavy. At Calgary the temperature fell below zero on seven days and rose above the freezing point on thirteen. At Edmonton it fell below on seven and rose above 32 on sixteen. The highest temperature, 49 degrees, occurred at Macleod on the seventh, and the lowest, 31.5, at Oonikup on the twenty-first.

April.—The weather was for the most part fine, mild and enjoyable, the range of temperature between day and night decreasing as the month advanced. Rain fell on six days only and it was local in most instances, thunderstorms at a few places also being reported on the twenty-third. On the first the temperature was well below zero at many places, but a rapid rise took place during the day, and although it continued cold until the seventh, it was not severely so. After the seventh mild weather set in and continued to the thirtieth, the maximum 60 degrees to 68 degrees being reached about the twenty-fifth. At Prince Albert seeding commenced on the 20th, and the Saskatchewan river opened on the twenty-fifth. At Calgary seeding was well forward on the thirtieth, the river opened on the twenty-fifth, many birds arrived by the fifteenth, frogs piping on the twenty-fifth. At Edmonton seeding was nearly finished by the thirtieth. At Swift Current seeding had only commenced on the thirtieth, and at Qu'Appelle it was reported as advancing, but that there was little growth in vegetation. At the latter place sleighing was over on the twelfth and the river opened on the eighteenth. In most districts rain is much needed.

May.—The weather was for the most part fine and warm, but owing doubtless, to frosts, which occurred on the twenty-eight and twenty-ninth and were quite frequent up to the fifteenth, and also the small rainfall, vegetation did not make very much progress. The following reports from a few stations will better indicate the conditions: Qu'Appelle—Trees in bud on the fourth, in foliage on the eighteenth, crops and vegetables well up but damaged by frost, grain rapidly recovering; Indian Head—Crops doing well, no great harm done to grain by frost except to peas and barley, ground moist; Medicine Hat—Crops two weeks later than usual; Swift Current—Weather generally cool and dry, temperature 70 degrees on three days and 80 degrees on one day, good rain on twenty-

third and thirtieth, vegetation backward: Calgary—Crops well advanced and looking excellent, river high, cattle in good condition; Banff —A few patches of snow on ground, trees leafing on the fifteenth, wild strawberries blooming on the seventeenth, ice breaking up on Lake Minnewaubee on the sixth.

June.—The weather in the Territories did not differ much from normal and the differences recorded were chiefly local. In southern districts it was rather cooler than usual, but the greatest departure from mean temperature in any district was not more than two degrees; altogether the conditions were favourable to vegetation. The following reports from a few stations indicate the condition of crops: Prince Albert—Crops set back during the first part of the month by frost, but restored by recent rains and warm weather; Swift Current—It has been a rainy month, with thunderstorms on five days, frost occurred on the thirteenth and slight damage to garden stuff, the temperature was variable, nevertheless vegetation is making rapid progress, and a good hay crop is expected on high lands; Edmonton—Rain came in time to save crops. excepting oats in a few cases; hay promised to be scarce but is now picking up; the frost on the thirteenth did no permanent damage; Qu'Appelle—Grain crops and hay growing well, considerable damage done by hail on the twentieth, ground wet; Calgary—Wild flowers abundant, crops well advanced, river falling rapidly; Indian Head—Rain abundant, crops advancing rapidly, wheat will head within a fortnight, vegetables and roots backward from frost on fourteenth.

July.—Observers in the North-West Territories were unanimous in the opinion that the outlook for good crops was very promising. Ground frosts occurring on the twentieth seem to have done slight damage, but apparently there was no instance of the thermometers placed four feet above the ground surface recording a lower temperature than 34 degrees. The following are among reports received: Edmonton—Weather during July exceptionally favourable to crops, which now promise well; cutting will start on the fifteenth, hay plentiful; Calgary—Crops looking well, rivers still high, fine growing weather; Medicine Hat—More than the usual number of showers; Swift Current—High temperature on many days, on the twelfth and sixteenth reaching 100 degrees in the shade, frequent thunder attended by heavy showers of rain, haying commenced and plentiful, garden stuff especially abundant, stock doing well; Prince Albert—Frosts reported from some parts of district but only tender plants touched slightly, weather favourable for crops which are in good condition; Qu'Appelle—Grain well headed, medium height, vegetables backward, hay plentiful, ground wet, light patchy frost in district on the nineteenth; Moose Jaw—Grain crops heavy, well headed and filling; Regina—Wheat headed and filling.

August.—Notwithstanding the fact that the mean temperature of August was below the average, reports of observers are all to the effect that the season has been favourable, that large crops are assured, and that no killing frosts have occurred in the Territories. The following are among the reports received: Edmonton—Three-fourths of the wheat and other grains cut, yield and sample excellent, light frost on thirty-first did no damage except in very low places, roots good; Qu'Appelle—Harvesting general on twenty-fourth, birds flocking, vegetation blighted, crops backward from wet; Prince Albert—Weather favourable for harvest, which is progressing as rapidly as possible; Indian Head—About seventy-five per cent. wheat cut, no frost, probable average on summer

fallow thirty bushels, stubble twenty-three, weather cloudy, temperature rising.

September.—Frosts were reported from many stations, but apparently little damage was caused thereby. The weather was usually fine, warm and dry and the rainfall, though above average in eastern districts, was below in most places elsewhere. The maximum temperature, which occured generally late in the month, reached 92 degrees at Gatesgarth, Pense, Assa., and was above 85 degrees at many places. The following were among the reports received: Edmonton,—Harvest over, threshing is giving good returns, weather has been particularly favourable; Qu'-Appelle,—Threshing general, vegetation dead, indications of early winter; Prince Albert—Trees quite bare, frost did but little damage to grain, vegetables fairly good but backward, raspberries plentiful, tender vegetables again touched with frost on the twenty-sixth.

October.—In the Territories the weather was cool, cloudy and wet, the amount of cloud and rainfall being above average and the temperature below. The lowest temperature reported was 7.5 degrees from Knee Hill on the fifth. Frosts were very frequent and by the end of the month rivers at some places were frozen over. Some damage to grain, not stacked, by rain, and also to late grain crops, is reported, The following are among the reports received. Edmonton—Threshing of grain in full progress, yield and sample up to expectations; Qu'Appelle—Snow birds on the twenty-ninth, ducks all gone south, threshing well advanced, ploughing over on the twenty-ninth; Medicine Hat—No snow and no ice; Swift Current—Slight snowstorms on the fifteenth and eighteenth, which quickly cleared away, strong winds on the tenth and fifteenth; West Prince Albert—River began to freeze over on thirty-first.

November.—The weather in the North-West Territories did not much vary from normal excepting in the low mean temperature of southern districts contrasted with the high mean of the northern portions of the Territories. The lowest temperatures were recorded generally about the twenty-first or twenty-second when 20 degrees were reported from many places, whilst at Battleford it fell to 33 degrees. Over the greater portion of the province there was little snow on the ground at the end of the month, the chinook winds of the twenty-fifth having caused it to disappear. The following is a summary of the reports received: Swift Current—Exceptionally fine and dry month, early part of month temperature on many days 44 degrees, thermometer dropped below zero on the nineteenth and five following days; Qu'Appelle—Roads excellent, unusually damp; Calgary—Chinook winds on the twenty-fifth cleared off all the snow excepting some patches; Edmonton—Want of snow prevents marketing of grain.

December.—The weather was generally fine, extremely mild and dry, and although the absence of sleighing was of considerable inconvenience, the benefit to range stock in the west was of much more importance. The coldest period of the month occurred on or about the thirty-first when temperatures between 30 degrees and 40 degrees were reported from several districts; against these low temperatures there were maxima of between 50 degrees and 60 degrees also recorded at these stations, 59.8 degrees being reported from Medicine Hat on the twenty-seventh. At some places the range between the twenty-seventh and thirty-first was as much as 75 degrees. The following notes are taken from the reports received: Edmonton—Want of snow affecting business, very little grain being marketed, robins seen here on the twenty-seventh; Calgary—

Season particularly favourable for range stock; Swift Current—Very fine month, the temperature only dropping below zero on the thirteenth and the last three days of the month, not sufficient snow for sleighing.

In Table I below will be found the mean annual precipitation for each year, where the information is complete, for the years 1883 to 1898 inclusive, at a number of different points throughout the North-West Territories, and Table II represents the monthly precipitation readings at all the different rainfall stations within the Territories. Table III contains the mean maximum and minimum temperature for each month in the past year at the various points with dates of the latter. I am indebted to the records of the Dominion meteorological service for these data:

TABLE I.—MEAN ANNUAL PRECIPITATION, FROM 1883 TO 1898 INCLUSIVE.

STATION.	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898
Regina		8.16	2.89	3.18	14.93	7.02	2.22	11.47	12.39	9.46	4.88	3.90	9.29	15.19	5.97	8.66
Medicine Hat		12.49	8.02	5.47	8.43	11.98	6.08	7.79	9.70	7.81	9.08	10.09	11.39	11.21	11.77	15.90
Edmonton	6.27	11.97	10.30	6.53	9.48	15.88	6.48	19.30	15.63	11.43	12.34	12.27	10.77	9.50	12.16	10.90
Swift Current				7.45	13.88	9.96	6.37	13.04	17.68	12.18	8.68	6.62	9.50	9.62	12.23	15.25
Qu'Appelle		11.40	6.68	6.94	11.16	13.47	5.93	18.34	15.31	11.42	11.25	6.63	11.96	15.46	8.76	21.65
Calgary				7.28	10.15	12.40	5.88	10.70	8.93	5.47	6.88	8.49	10.76	8.68	15.69	* 8.92
Prince Albert				6.44			7.30	12.23	8.77	8.76	8.45	5.17	8.88	13.25	11.04	† 13.35
Battleford									7.41	10.63	9.24	9.79	10.56	8.65	14.09	14.15

* 8 months. † 11 months.

TABLE II.—MEAN ANNUAL PRECIPITATION, 1898.

STATION.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT	OCT.	NOV.	DEC.	TOTL
Regina	0.10		0.57		0.21	2.55		2.68	2.10	0.30		0.15	8.66
Medicine Hat	0.45	1.07	1.62	1.42	0.48	1.51	2.45	2.22	1.07	1.71	1.23	0.67	15.90
Edmonton	0.24	1.22	0.86	0.40	0.20	2.80	2.00	0.85	0.82	1.06	0.53	0.28	10.90
Swift Current	0.57	0.82	2.02	0.60	1.31	2.56	2.81	1.79	0.90	1.33	0.41	0.13	15.25
Qu'Appelle	0.56	0.40	1.46	0.92	0.45	4.60	2.25	3.57	3.37	2.40	1.44	0.23	21.65
Calgary	0.20	0.90	1.57	0.29	2.05	3.21					0.30	0.40	8.92
Prince Albert	0.74	1.86	1.10	0.06	0.51		1.95	1.84	2.21	1.89	0.90	0.29	13.35
Battleford	0.53	1.58	0.91	0.02	2.03	4.24	1.09	1.58	0.46	0.83	0.68	0.20	14.15
Knee Hill	0.05	1.40	0.56	0.76	0.40	1.54	3.47	1.79	0.39	1.12	0.27	0.50	12.25
Crooked Lake	2.65	2.35				1.27	1.51		0.64	1.89	1.13		11.44
Fort Simpson			0.53										
Alameda	0.10	0.60		0.45	0.54	2.82	1.30	2.72			0.30		8.83
Duck Lake					1.45	2.76	1.78	1.84	1.54	1.19	0.53		11.09
Tignish								0.50					
Indian Head	0.40	0.30	0.60	1.05	0.50	4.14	3.36	4.00	4.03	1.85	0.40	0.00	20.63
Cannington	0.20	1.35		1.29	0.86	4.28	4.73	2.91	2.78	3.29	0.79	0.20	22.68
Macleod	0.30	0.53	1.00	0.27	1.59	1.90	1.57	4.04	0.85	0.58	0.15	0.80	13.58
Gatesgarth	0.20	0.46	0.75	0.95	0.36	2.66	2.84	2.27	1.87	0.91	1.00		14.27
Pincher Creek	0.52												
Banff	0.22	2.47	0.99	0.81	3.08	2.15	4.54	2.37	1.72	1.09	0.94	0.20	20.58
Calgary	0.20	0.90	1.53	0.61	1.89	3.12	3.44	1.83	0.45	0.52	0.80	0.48	16.75
Henrietta	0.40	0.90											
Chaplin	0.10	0.40	1.30	0.00	0.03	2.33	0.18	0.15	1.09	0.25	0.62	0.00	6.45
Moose Jaw				0.38	0.42	2.43		0.42	1.56	0.50			5.71

TABLE III.—TEMPERATURE, 1898.

STATION.	JANUARY.				FEBRUARY.				MARCH.			
	Mean	Max.	Min.	Date of Min.	Mean	Max.	Min.	Date of Min.	Mean	Max.	Min.	Date of Min.
Medicine Hat.	19.6	39.9	—16.0	24	16.0	48.3	—25.0	18	17.6	43.8	— 0.0	26
Edmonton	18.1	38.0	— 8.0	24	7.3	43.0	—29.0	17	19.8	44.0	—25.5	25
Swift Current..	17.2	33.0	—12.8	24	12.3	41.3	—20.0	17	13.4	41.0	—20.0	26
Qu'Appelle...	8.5	30.6	—16.5	26	4.7	38.0	—27.4	17	10.2	36.7	—26.0	27
Calgary	20.9	44.3	— 8.0	24	14.5	44.8	—20.0	19	17.8	42.3	—18.0	25
Prince Albert..	3.4	35.5	—31.5	26	0.5	28.0	—33.7	20	10.2	33.0	—26.5	27
Battleford	5.1	34.0	—28.0	24	0.1	28.0	—30.0	24	11.0	36.0	—28.0	21
Oonikup	2.8	32.5	—33.0	28	4.2	29.5	36.0	15	8.9	44.5	—32.5	21
Banff	16.4	30.2	— 8.9	10	19.3	44.2	—23.2	19	17.9	41.8	—27.3	26
Calgary (2)..	21.0	44.5	— 8.1	10	14.4	52.0	—21.5	19	17.8	45.0	—18.2	25
Henrietta.....	1.1	33.9	—36.2	24	....	....	....	....	....	....	....	....
Chaplin.....	8.0	32.0	—25.0	25	8.3	45.0	—20.0	17	12.9	37.0	—30.0	26
Moose Jaw. .	7.3	30.0	—22.0	25	5.7	39.0	—25.0	17	9.4	43.0	—28.0	27
Regina	6.2	41.0	23.5	24	3.2	40.5	28.5	17	13.2	37.5	—28.0	27
Indian Head .	6.7	33.0	—23.0	30	4.8	38.0	30.0	17	8.1	35.0	—32.0	27
Cannington...	9.8	38.5	—17.5	31	7.0	42.2	—26.5	18	....	....	....	....
Macleod	28.7	46.0	—13.0	24	22.2	50.0	—18.0	17	19.3	49.0	—17.0	26
Yarrow.....	24.5	48.0	—12.0	24	25.4	52.0	—22.0	19	19.9	49.0	—29.0	26
Gartesgarth ..	6.4	33.0	—22.0	24	4.4	37.0	—30.0	20	8.4	35.0	—30.0	28
Pincher Creek.	24.9	42.0	— 8.0	24	....	....	....	....	....	....	....	....
Knee Hill	13.4	38.0	—16.0	24	7.8	39.0	29.5	17	13.5	44.0	—26.5	25
Crooked Lake	4.6	37.0	26.0	25	2.8	40.0	40.0	24	11.4	49.0	29.5	27
Ft. Simpson..	.....	.. ..	...	....	...	...	...	....	4.3	41.5	—31.5	7
Alameda.....	4.1	29.0	—23.0	9	2.9	38.0	—29.0	7	9.9	41.0	—22.0	26
Duck Lake ...	....	...	...	....	....	....	....	....	....	....	....	....
Tignish.	....	.....	....	....	....	....	....	....	....	....	..	....
Grenfell	....	.....	..	...	....	....	..	....	....	....	...	....

TABLE III.—*Continued.*

STATION.	APRIL.				MAY.				JUNE.			
	Mean	Max.	Min.	Date of Min.	Mean	Max.	Min.	Date of Min.	Mean	Max.	Min.	Date of Min.
Medicine Hat.	41.9	77.8	0.0	1	54.8	80.8	28.0	1	61.9	94.8	31.4	1
Edmonton ...	39.9	78.0	11.0	2	55.1	81.0	29.0	3	59.0	94.0	25.5	13
Swift Current..	36.4	73.0	2.0	1	52.0	79.5	29.0	1	59.8	95.0	34.0	14
Qu'Appelle. ..	35.4	74.8	— 8.0	5	51.0	84.6	20.5	1	58.8	98.0	24.7	14
Calgary	38.2	76.0	4.0	1	41.1	76.0	22.0	8	56.4	84.3	35.0	11
Prince Albert..	35.7	70.0	—12.5	1	52.1	82.0	24.3	1	....	....	....	....
Battleford	34.9	74.0	—10.0	1	53.6	83.0	26.0	10	59.7	95.0	28.0	14
Oonikup	35.8	64.5	5.0	4	50.8	82.0	17.5	1	....	....	....	...
Banff.....	36.6	65.1	7.8	3	44.9	72.4	20.8	1	51.1	80.1	30.2	4
Calgary (2).	38.0	79.5	4.5	1	48.5	75.5	21.0	8	56.6	82.5	35.0	11
Henrietta.. ..	....	....	....	....	....	....	....	....	....	....	....	....
Chaplin. . ..	37.3	67.0	— 7.0	1	56.8	78.0	36.0	14	68.3	95.0	45.0	24
Moose Jaw....	35.7	70.0	—20.0	1	50.0	86.0	22.0	10	58.9	94.0	29.5	14
Regina	34.2	72.5	— 7.0	5	50.3	85.0	23.0	1	25.0	99.0	25.0	14
Indian Head .	36.7	77.0	—10.0	5	55.1	84.0	20.0	28	27.0	95.0	27.0	14
Cannington...	35.9	78.5	— 1.5	3	50.2	85.0	20.0	2	36.0	89.5	36.0	11
Macleod . ..	43.1	76.0	14.0	1	51.2	76.0	25.0	1	34.0	85.0	34.0	1
Yarrow..	38.7	74.0	0.0	1	46.1	74.0	10.0	4	31.0	81.0	31.0	1
Gatesgarth..	33.0	72.0	— 3.0	3	50.9	85.0	21.0	5	26.0	95.0	26.0	14
Pincher Creek.	.....	....	....	....	....	....	....	....	....	....	....	....
Knee Hill	36.5	78.0	4.5	1	49.8	76.0	21.5	1	34.0	84.0	34.0	11
Crooked Lake.	34.9	80.0	15.0	3	50.4	90.0	11.0	10	24.0	98.0	....	14
Ft. Simpson...	....	...	...	....	....	....	....	....	....	....	....	....
Alameda.....	35.9	61.0	3.0	4	49.6	87.0	24.0	27	34.0	95.0	....	14
Duck Lake...	40.5	71.5	20.8	30	50.9	80.0	24.5	10	21.5	87.5	....	14
Tignish..	.....	....	....	....	....	....	....	....	....	....	....	....
Grenfell	.....	....	....	....	....	....	....	....	....	....	....	....

TABLE III.—*Continued.*

STATION.	JULY.				AUGUST.				SEPTEMBER.			
	Mean	Max.	Min.	Date of Min.	Mean	Max.	Min.	Date of Min.	Mean	Max.	Min.	Date of Min
Medicine Hat.	69.3	101.8	44.1	18	69.4	95.8	49.1	2	56.6	86.8	30.0	29
Edmonton ...	62.9	87.0	40.1	20	62.9	87.5	39.0	7	52.8	80.0	29.0	29
Swift Current .	66.3	98.5	40.8	7	65.9	93.2	41.3	16	54.4	84.0	28.0	29
Qu'Appelle....	64.1	96.7	34.4	20	61.7	88.7	35.4	12	53.0	88.8	24.8	9
Calgary	...	...	...	...	...	...	...	...	...	...	...	...
Prince Albert..	63.3	91.0	35.0	20	60.0	86.5	36.1	13	50.8	84.2	23.5	9
Battleford ...	65.2	92.0	38.0	20	62.6	86.0	38.0	16	53.5	88.0	26.0	8
Oonikup.....	64.0	93.0	33.0	21	61.5	87.5	36.0	26	52.3	77.0	29.5	9
Banff	56.2	85.3	30.5	7	59.9	85.2	32.0	29	48.0	73.3	24.8	30
Calgary (2)....	61.8	91.0	38.0	7	62.6	87.0	35.5	29	52.3	83.3	23.5	29
Henrietta.....	.....	...	...	...	...	...	...	...	...	...	...	...
Chaplin.	66.1	103.0	40.0	6	61.8	93.0	37.0	31	52.8	82.0	27.0	29
Moose Jaw....	.....	....	....	....	62.4	95.0	35.0	30	51.5	88.0	23.0	9
Regina.. . ..	.....	....	....	....	63.3	91.0	35.0	30	53.9	90.0	24.0	9
Indian Head..	66.5	99.0	35.0	22	61.2	90.0	32.0	12	52.4	89.0	25.0	9
Cannington..	61.8	97.0	38.0	20	60.4	35.0	35.0	12	51.5	88.0	23.5	9
Macleod.....	69.5	98.0	43.0	6	67.2	44.0	44.0	31	56.9	83.0	32.0	29
Yarrow.....	61.8	93.0	35.0	7	62.4	41.0	41.0	23	52.8	82.0	29.0	6
Gatesgarth ..	64.1	103.0	38.0	27	62.3	36.0	36.0	30	53.8	92.0	25.0	9
Pincher Creek.	...	....	....	....	....	....	....	..	....	....	....	...
Knee Hill	62.2	93.5	31.0	7	62.5	37.0	37.0	29	51.4	81.0	17.0	29
Crooked Lake.	66.0	99.5	37.5	20	62.3	38.0	38.0	30	52.9	88.5	26.0	9
Ft. Simpson...	...	....	....	....	....	....	....	....	....	...	....	...
Alameda . .	64.3	99.0	32.0	19	61.4	33.0	33.0	11	...	....	....	....
Duck Lake....	62.8	92.5	31.5	20	59.6	37.0	37.0	23	50.3	83.5	24.5	29
Tignish.....	....	.. ..	....	....	55.7	27.0	27.0	30	....	....	....	....
Grenfell	.....	....	....	....	....	....	....	....	....	....	....	....

TABLE III.—*Continued.*

STATION.	OCTOBER.				NOVEMBER.				DECEMBER.			
	Mean	Max.	Min.	Date of Min.	Mean	Max.	Min.	Date of Min.	Mean	Max.	Min.	Date of Min
Medicine Hat.	40.5	67.8	14.0	20	23.2	58.8	—11.0	23	2.05	59.8	—23.0	31
Edmonton	35.5	58.0	16.0	6	22.6	51.5	—21.0	22	23.0	47.5	—32.0	31
Swift Current .	37.3	68.0	16.0	6	22.0	48.0	—18.0	21	17.7	48.0	—19.0	29
Qu'Appelle....	34.1	56.0	16.0	24	17.4	49.6	—22.5	21	11.4	42.2	—28.0	31
Calgary	.....	...	...	...	21.7	48.0	—23.8	21	21.4	46.0	—31.0	31
Prince Albert..	33.3	61.0	12.3	9	16.6	44.0	—28.7	22	8.9	43.0	—37.9	31
Battleford	35.4	66.0	14.0	17	16.4	50.0	—33.0	22	10.8	43.0	—35.0	31
Oonikup.....	32.2	58.0	2.5	29	12.1	41.0	—28.0	25	1.7	36.5	—38.5	31
Banff	35.0	49.6	15.8	5	20.9	41.8	—15.8	21	19.2	48.0	—25.5	31
Calgary (2) ...	36.9	68.0	15.0	19	22.6	53.0	—23.2	21	22.3	55.0	—30.9	31
Henrietta.....	.....	...	...	...	...	...	...	...	...	...	...	...
Chaplin.....	37.2	70	22.0	28	19.9	50.0	—30.0	21	11.9	43.0	—23.0	29
Moose Jaw....	34.2	62	10.0	29	17.4	52.0	—27.0	22	11.3	42.0	.....	....
Regina.....	35.0	52.0	17.0	30	20.4	46.0	—25.0	25	11.3	45.0	—28.0	31
Indian Head .	33.8	56.0	16.0	21	17.9	51.0	—24.0	22	10.6	46.5	—26.0	31
Cannington ..	32.4	56.5	11.0	4	18.1	45.0	—16.0	21	11.7	56.0	—27.0	31
Macleod.....	40.7	62.0	14.0	25	28.2	50.0	—19.0	21	25.5	53.0	—30.0	31
Yarrow.. . ..	39.1	61.0	4.0	4	...	47.0	—20.0	21	.....	42.0	—33.0	31
Gatesgarth...	35.4	60.0	12.0	24	16.3	58.0	—25.0	22	10.8	....	—25.0	31
Pincher Creek.	....	....	....	..	.....	..	.....	...	...	38.0	...	....
Knee Hill	36.5	64.0	7.5	5	19.2	50.0	—20.5	23	10.5	49.0	—28.0	31
Crooked Lake.	35.1	77.5	13.0	24	16.4	45.0	—28.5	22	17.4	46.0	—30.5	31
Ft. Simpson ..	.....	...	....	....	...	...	...	...	...	....	....	....
Alameda.....	....	... ..	... ..	....	16.3	59.0	—27.0	24	....	38.0	—27.0	29
Duck Lake ...	33.6	64.0	13.0	1	15.6	50.0	—31.0	22	8.2	43.5	—42.0	....
Tignish... .	.....	.....	...	....	....	....	....	...	...	....	....	...
Grenfell	.....	....	....	....	....	....	...	...	10.5	38.0	—29.0	31

NOXIOUS WEEDS.

The noxious weed problem is doubtless one of the most serious questions facing the department. The weed has ever been found in the vanguard of civilisation and slowly but surely follows man in his westward progress. It was years before the province of Manitoba became overrun with these pests, but if a vote were taken to-day among the farming population of that province as to the greatest drawback to agricultural operations there, a verdict in favour of noxious weeds would be almost unanimous. In a great many cases, weed-infested quarter sections, worth under ordinary conditions several hundred dollars, have been abandoned and would not now be accepted as a free gift by any farmer recognising the seriousness of the evil and the responsibility of the owner of such lands under The Noxious Weeds Act of that province.

The rich nature of the soil in the Canadian North-West is peculiarly congenial to the growth of noxious weeds and renders the eradication of such plants vastly more difficult than in any country with inferior soil.

The baneful effects of weeds on cultivated lands are manifold. The useful plants that are cultivated are robbed of their share of nutriment and moisture, and by crowding and shading the crop the effect of these weeds is detrimental to the best success. A very important item is the additional expense in the cleaning of grain for market and seed. As a rule the feed value of weeds is very low and another objection which might be urged is the effect they have in interfering with the regular crop rotation of any district. A plea in their favour is often advanced, namely, the fact that they are supposed to arrest the escape of nitrids from the soil through leaching, and on their value as a green crop for fertilisation. There can, however, be no reasonable doubt that the harm they do greatly outweighs any advantage they may possess.

The various and ingenious manners in which weeds are distributed from one locality to another has been the subject of very thorough investigation. The chief sources of danger, however, is their presence in seed grain, grass and clover seed and feed stuff, their introduction by birds and animals of migratory habits, the wind and the inherent powers of the weeds themselves. The seeds are carried from farm to farm on the wheels of carriages, farm waggons and by threshing machines.

The reports of the inspectors of noxious weeds during the season of 1898 has enabled the department to form some sort of an intelligent estimate as to the distribution of weeds in that portion of the Territories which was inspected. French or stink weed is regarded as the most dangerous growth we have to deal with in the Territories. It occurs in almost every district inspected and it behooves the farmer to devote very serious attention to its eradication. It is particularly thick on some of the oldest farms in the Qu'Appelle Valley. Hare's ear mustard only occurs in very few places in the south-easterly portion of Assiniboia, but is very plentiful in the country contiguous to the Manitoba & North-Western Railway. It is found here and there along the main line of the Canadian Pacific Railway from the Manitoba boundary and has obtained a firm stand in the Regina and Moose Jaw districts. Tumbling mustard has invaded the south-easternly portion of Assiniboia and has become a source of great danger in that part of the country. Strange to say, it does nor appear with any frequency along the main line from Moosomin to Grenfell, but has been introduced in the Esterhaz district and in one or two places along the Little Cut Arm Creek as well as in the country lying between the Pheasant Hills and the main line. The portion of the

Territories lying west of the latter point is fairly free from this weed as far as our official records show. The Canada thistle was no doubt brought into the country at the time of the construction of the railways in feed oats. The inspectors' reports invariably locate it along the right of way of railways. It is, however, found in a few isolated cases in the easterly portion of Assiniboia, where it has no doubt been introduced in seed grain. It is reported to infest the Manitoba and North-Western Railway right of way at Langenburg, Saltcoats and Yorkton, and has spread to some extent on the farms south of that line.

There was only one case of Russian thistle reported in the Territories during the season, namely, on Section 6 Township 1 Range 6 west of the Second Merioian, an abandoned farm immediately north of the international boundary. Steps were taken at once to have the land upon which this weed had obtained a foothold cleared at the expense of the government, by cutting, raking and burning. It is needless to enlarge upon the baneful effects of the Russian thistle in the central and northern states. A special inspection should be made of this property during the coming season, and very radical measures taken to prevent the further spread of the weed.

Eleven inspectors were employed during the past season. I append a copy of the instructions under which they worked.

SIR,—I beg to inform you that upon the recommendation of the Commissioner of Agriculture, you have been appointed an Inspector under the provisions of The Noxious Weeds Ordinance, a copy of which I beg to enclose for your guidance and information.

You will be required to provide at your own expense a conveyance for cross country travelling in your district in the most rapid and satisfactory manner, and you will be required to defray all ordinary living and travelling expenses for yourself and horses. Your gross remuneration is to be at the rate of $3.00 for each day employed. Generally speaking, your duties will be—

1st—To take every active measure expedient towards the eradication of Noxious Weeds.

2nd—To distribute publications on the subject (whenever furnished for that purpose) among the farmers in your district.

3rd—Through reports to this Department to enable the Government to form an idea as to the districts within the grain producing area of the North-West especially badly infested with noxious weeds.

4th—To make recommendations as to the most effective and economical manner of dealing with the eradication of such weeds upon unoccupied lands in various localities.

With reference to paragraph 1, I would point out that the Commissioner will expect you to exercise your best judgment in any attempt which you may make towards the enforcing of the provisions of the Ordinance. Where you come across fields badly infested, you are personally to serve the following notice on the owner, or in lieu of that, hand to some member of his family or household if the land in question is occupied.

"SIR,—In travelling over this district in my capacity of Inspector of Noxious Weeds, under the Territorial Government, it has come to my notice that the following weeds, declared noxious under Section 1 of The Noxious Weeds Ordinance, are found growing on your land. . . . . I beg to direct your attention to Section 4 of the said Ordinance, (a copy of which I enclose herewith), and to state that a further inspection of your land may be made within a short time, when, I trust, in your own interests it will be found that you have taken steps to destroy the weeds complained of.

"I feel certain that you realise the great importance of taking vigorous measures to eradicate a pest which has already taken a strong hold in some portions of the Territories, and threatens to become one of the greatest obstacles to profitable farming in such districts. Under the circumstances it has become necessary to enforce vigourously the very stringent penalty, laid down in paragraph 6 of The Noxious Weeds Ordinance, in cases where individuals neglect to comply with this notice."

Blank forms of the foregoing notice will be furnished you from this Department, as well as envelopes and copies of the Ordinance referred to, one of which is to accompany all such notices as indicated therein.

It would, of course, be impossible for you to return and make a further inspection in all cases where it is found necessary to serve the foregoing notice, and I am, therefore, directed to instruct you to take no further action in such cases, beyond furnishing a list of the names and addresses of the persons in question of the township diagrams to be furnished you, as often as you report to this department, when the commissioner will decide where a further inspection is to be made. You are particularly to avoid taking

any action in your official capacity which would be likely to create ill-feeling or dissatisfaction in your district, but rather to point out to offenders that the object of enforcing the Ordinance is to afford protection to themselves as well as to their neighbours, and that it is distinctly in their own interest to co-operate with you in the proper discharge of your duties, at the same time giving them to understand that it is the intention of this department to enforce the provisions of the law.

I attach herewith a list of the names and addresses of all statute labour overseers within the district assigned to you, and I am to point out that it will be advisable before commencing the inspection of any township organised under The Statute Labour Ordinance, to call upon the overseer and ascertain from him whether his district is badly infested with weeds or not. You should endeavour to the best of your ability to interest these overseers in the object of your mission and induce them to co-operate with you. A little time spent in discussing with them the best and cheapest means of dealing with the weed question and pointing out the danger which will surely arise if this evil is not dealt with in time, will, as a rule, be time profitably occupied. Besides, the information which you will gather from these men may save you a good deal of unnecessary travelling to points comparatively clear of weeds, and thus probably prevent you from devoting the time and attention to the badly infested districts which it would be advisable you should give the same.

A bulletin dealing with the question of the eradication of noxious weeds, is at present in course of printing. As soon as it is issued a supply will be sent you which you are to carry with you and distribute in places where you consider that the information contained therein will be useful, and in this manner stimulate the public to greater efforts in the future along the lines laid down in the said bulletin.

During the period of your employment, you are, if possible, to make a detailed report of your progress, twice a week, giving, as before stated, a list of the parties upon whom the notice is served, and what your post office address will be for the coming week, so that departmental communications may find you. You are also to give a list of unoccupied lands infested with noxious weeds from time to time (giving the quarter section if possible) and in every case make a recommendation as to the most economical manner of preventing the said weeds from going to seed, where arrangements can be made with any settler in the neighbourhood to perform whatever work is required in order to attain that object, and to state what the cost of the said work will be. With this information before him, it is expected the commissioner will be able to decide upon cases where it will be expedient to pay for the work in question out of the public funds set apart for expenditure in connection with the eradication of noxious weeds. It would be well in all such cases to ascertain the exact amount of money required for the work and full name and address of any party willing to undertake it, so that action might be taken in urgent cases to have the work proceeded with, without unnecessary correspondence and delay.

You will be furnished with a supply of township diagrams, one for each township in your district, and also a red and blue pencil. You will be required to mark with a cross in blue every occupied quarter section, and with a cross in red, every unoccupied quarter section which you find badly infested with noxious weeds. In the margin of this diagram and on the back thereof, you are to make a list of the owners or occupiers of such lands by quarter sections. It will also be well that you should mark any road allowance upon which you find such weeds. Whenever any particular township is organised as a statute labour district, please note the fact plainly upon the diagram. In cases where upon inspection you find that a township is free from noxious weeds, simply state this information across the face of it. Please be very particular about filling in the number of the township and range in the space provided for the same on the diagram referred to. In order to obviate, as far as possible, the danger of losing these diagrams, it would be well that you should mail them to this department with your bi-weekly reports as you go along. I enclose with this a sample copy of such a diagram upon which I have noted the result of an imaginary inspection of a township, in order to illustrate the manner of using the said diagram.

You are to use your own judgment in laying out your routes, but should endeavour to devote the greatest part of your time to more thickly populated localities of your district. I enclose with this a map upon which I have outlined the district you are to cover, and also coloured the areas at present forming the Herd District, under the Ordinance in that respect. As a general rule you may take it for granted that such areas represent the localities wherein the greatest area of lands are under cultivation and where consequently the danger from noxious weeds should be greatest.

You are to inspect, as far as possible, the full right of way of any line of railway in your district, and in cases where noxious weeds are found, take prompt action under Section 4 of the Ordinance.

At the close of the season's operations, you are to submit a full report to this department for the information of the Commissioner, dealing generally with the whole question of the eradication of noxious weeds, stating in which localities such weeds are particularly prevalent, whether the settlers are taking any active measures to eradicate the same, in fact, report fully in any matters of general interest in this connection which have come under your observation during your travels through the district assigned to you. The said report is to be forwarded with your account for services rendered.

Mr. Paul Huffman had charge of that portion of Eastern Assiniboia lying north of the international boundary, west of the westerly boundary of the Province of Manitoba, east of Range 9 west of the Second Meridian and south of Townships 7. Mr. Huffman advises in his report that the work should in the future commence towards the middle of June and that a circular should be sent to the settlers informing them when the inspector will be in their vicinity. He found that most of the farmers cropped all the available land they had, irrespective of the condition of the same in regard to weeds. Mr. Huffman also urges that some supervision should be exercised over the operators of threshing machines which are instrumental in carrying the seeds of noxious weeds from one farm to another.

Mr. A. B. Nesbitt inspected that portion of the Territories lying north of the international boundary, west of Range 33 west of the Principal Meridian, east of Range 3 west of the Second Meridian and south of Townships 7. Mr. Nesbitt was in the field some 22 days. He points out that the inspecting season did not commence at an early enough date. He also recommends in his report that more authority should be given inspectors than was extended to them in the letter of instructions under which they performed their work. Mr. Nesbitt reports that a great number of the farmers are very anxious to comply with the provisions of the Ordinance but states that he met with considerable opposition in some quarters. He also urges that steps should be taken whereby the overseers of local improvement districts should be compelled to destroy weeds on road allowances within their districts at the expense of the said districts. He states that the fireguards plowed around stacks are a fruitful source of trouble in respect to noxious weeds, and expresses the opinion that parties ploughing such guards should be compelled to keep them clean.

Mr. William Taylor was engaged in that portion of Eastern Assiniboia lying north of the international boundary, west of the Manitoba boundary, east of Range 33 west of the Principal Meridian, and south of Townships 7. He reports that all varieties of mustard are very plentiful in that district and considers that the tumbling mustard is the most dangerous weed the settlers there have to combat. He states that this weed grows most luxuriantly on new breaking and is inclined to think that the explanation of this is, that the seeds of the weed in question are scattered on the prairie by the high winds and germinate upon being turned down with the sod. He recommends the burning of the grass before breaking the sod, claiming that this would destroy the vitality of most of the seeds. Mr. Taylor considers that the root of the whole weed evil lies in abandoned lands, fire breaks and graded roads. He is strongly of the opinion that each local improvement district should have its own weed inspector, who could look after the weeds upon fireguards and roads at the expense of the district, even if the ordinary roadwork was to some extent neglected. Mr. Taylor states that since gasoline has superseded steam in many of the grain elevators, the owners of the same are more careless in handling screenings. Formerly the screenings were used for fuel, while they are now piled up outside the buildings and scattered broadcast over the country by strong winds and stock feeding at the same.

Mr. Samuel McGurk inspected the country lying immediately north of Mr. Huffman's district. Mr. McGurk did not get into the field until it was fairly late in the season, but succeeded in making a pretty thorough inspection of his district. He states that noxious weeds are spreading

throughout that district with alarming rapidity and in some sections have increased to the extent of at least two per cent. during the past season. He recommends that infested crops should be stacked on the land upon which they are grown, and when threshed, the straw should be destroyed within forty-eight hours, as otherwise stock get the run of the straw stack immediately after threshing and are instrumental in spreading the seeds of the weeds over adjoining lands. Mr. McGurk is also of the opinion that a very strict supervision should be had over the owners of threshing machines, who should be compelled to clean their machines thoroughly of chaff, dust and seeds before moving from one farm to another. He strongly recommends the pulling of weeds by hand between the first and the twenty-eighth of July. Although this is a somewhat costly procedure, he is firmly convinced that it will be found profitable.

Mr. B. W. B. Eustace had charge of the Moosomin district. He reports his district as a whole fairly free from noxious weeds, but badly infested in one or two portions, principally with hare's ear mustard. He is of the opinion that this weed has not spread very rapidly during recent years. He found the bulletin issued by the department of considerable value and the interest in the noxious weeds question among the settlers very keen. He thinks that the inspecting season should commence about the middle of June and continue until the middle of August, also that threshing machines need looking after and that the elevators, which are bad offenders in scattering the screenings from the grain on the streets and railway tracks, as well as in the disposal of screenings containing noxious weed seeds, should be closely watched.

Mr. Findlay Kennedy worked in that portion of Assiniboia lying along the main line of the Canadian Pacific Railway between Wapella and Grenfell, south of the Qu'Appelle River. He reports that the district is not very badly infested with noxious weeds. French weed is the most troublesome, particularly in Townships 15, 16 and 17 Ranges 1, 2, 4 and 7. Hare's ear mustard was found to some extent in nearly every township he visited. The other varieties of mustard are not causing serious trouble in the district and Canada thistle prevails only to a limited extent. He considers hand pulling the surest method of eradicating weeds, but thinks that as long as farmers continue to crop dirty lands, noxious weeds will continue to spread. He recommends a system of shallow cultivation by which plants are killed as they appear. He reports that generally the settlers in his district are taking active measures towards eradicating these pests. Mr. Kennedy also refers to the serious trouble caused by threshing machines carrying noxious weed seeds from one farm to another. Mr. Kennedy expresses his satisfaction at the hearty co-operation extended to him by the overseers of local improvement districts in his official work.

Mr. W. H. Minhinnick had charge of the district lying immediately north of Mr. Kennedy's district, and although he went into the field rather late in the season he contrived to make a fairly thorough inspection. Mr. Minhinnick complains that the overseers of local improvement districts did not render him the assistance they might have done and attributes the fact chiefly to apathy. He considers that the educational work undertaken by the department will have the effect of causing these men to consider the question more seriously. Mr. Minhinnick found that a large number of the farmers in his district were taking a great interest in the matter of eradicating weeds while others exhibited surprising negligence. He recommends that some special work should be done in the foreign settlements in this respect.

Mr. Duke Barker inspected the country lying along the Manitoba and North-Western Railway Line, west of the Manitoba boundary. He reports that he visited all the main grain growing sections of his district. He only ceased inspection work a few days before the farmers commenced threshing operations. He states that the German colonies situated in Townships 21, 22, 23 and 24 Ranges 30, 31 and 32 west of the Principal Meridian, are badly infested with common wild mustard, hare's ear mustard, ball mustard and French weed. He recommends that steps should be taken to prevent the crofters and Galicians from obtaining grain containing foul seeds from this colony. He states that while a few of the Germans seemed anxious to comply with the provisions of the Ordinance, the great majority of them are very indifferent. He also advises the department that noxious weeds are rapidly spreading throughout the Hungarian colony south-west of Yorkton. Mr. Barker points out that the danger from French weed reaches further than its evil effects upon the grain crop, and states that he has been informed that on several occasions cream has been refused at the Yorkton creamery owing to the cows having fed in places infested with this weed, thus ruining the flavour of the cream. He reports that the farmers in his district received him with great cordiality and assisted him in every way in properly discharging his duties. Mr. Barker directs attention to the fact that a great deal of infested grain is being sold to the dealers and resold by them as seed without having been cleaned. He is of opinion that steps should be taken to put a stop to this practice.

Mr. Biden had charge of the district lying along the main line from Grenfell to Sintaluta. Mr. Biden thinks that the inspection work should commence earlier in the season and also that strict supervision should be exercised over threshing machine operators. He suggests that information might with advantage be published in the local papers when an inspector has been appointed and stating that he will be glad to receive information from anyone as to the location of farms badly infested with weeds. He experienced some difficulty in locating all the badly infested farms, owing to the fact that people disliked informing on their neighbours.

Mr. F.W. Dennehy inspected that portion of Assiniboia contained within the constituency of North Qu'Appelle. He considers that the months of May and June would be more suitable for such work than July. Mr. Dennehy reports that as a rule, the farmers in his district were doing their best to stamp out any dangerous weeds found upon their lands and were both willing and eager to assist him in locating badly infested lands. Although the period of his employment was rather brief, he does not think that he missed any notably infested farms. He states that the action of the department in dealing with this question is meeting with universal satisfaction. He is of opinion that the French weed is undoubtedly the most prevalent as well as the most injurious, and in some cases he advised the settlers to burn their stubble and straw immediately after threshing. Mr. Dennehy also strongly recommends the cleaning of threshing machines before moving from one place to another and is inclined to think that straw cut on dirty lands and stacked away from buildings, should be fenced to prevent stray cattle feeding upon it during the winter time and thus assisting in the spreading of noxious weed seeds.

Mr. Robert Green had charge of a larger district than any of the other inspectors of last season. He covered all that portion of Assiniboia lying between Balgonie and Moose Jaw. He entered upon his duties on the

eleventh of July and remained at work until the twenty-fourth of October. He commenced work at Balgonie and found the most troublesome weed in that neighborhood to be the rag weed. He gave the settlers advice as to the best manner of dealing with this weed and states that good work was done by the farmers there in combatting the pest. He reports that a small quantity of Canada thistle made its appearance in the vicinity of Lumsden and also that there is a great deal of French weed in that locality. The most prevalent weed in his district is the French weed. The different varieties of mustard are also troublesome. Mr. Green recommends in his report that the overseers of local improvement districts should be compelled to keep their roads clear of weeds. Very little trouble was experienced in dealing with the settlers throughout his district, and Mr. Green thinks that a large number of them followed the advice he has given them in regard to cultivation with a view to eradicating stink weed, namely, to plough the land not later than the sixth of June and cultivate thoroughly during the remainder of the season, also to burn the straw immediately after threshing. In all cases where the straw was required for feed he advised the farmers to fence the stack and to destroy the manure made from the same. Mr. Green distributed a very large number of noxious weed bulletins issued by the department, which he states have been read carefully by the settlers interested.

No work in the way of inspecting or eradicating noxious weeds was done by the department within the two rural municipalities in the Territories, namely, the municipality of Indian Head, and the municipality of South Qu'Appelle. The clerks of these municipalities were communicated with and it was found that the matter was being vigourously dealt with locally. At the end of the season, however, a money grant was made to both municipalities equal to the proportion of the government expenditure which they would have been entitled to on a basis of area.

During the season some attempt was made to grapple with the question of the actual work of eradicating noxious weeds by means of cutting, raking and burning the same upon abandoned lands, at the recommendation of our inspectors, or at least to prevent their going to seed and becoming a source of danger to the neighbourhood. Although a considerable sum was expended in this manner it hardly represented a drop in the bucket. It stands to reason that no active policy can be carried out in this respect without first making the land responsible for the outlay. The present Ordinance gives a remedy against the owners of abandoned lands, but in most cases these men are non-residents, and it is found impossible to collect the amount. The eradication of weeds on lands owned by private individuals is not, in any event, a charge which should be borne by the Territories as a whole.

Early in the season a bulletin was prepared by Professor Fletcher, the Dominion botanist and entomologist, entitled, " Noxious Weeds, and How to Destroy Them." An edition of 5000 was arranged for, and about 2000 copies were distributed in various portions of the Territories. Later on, a poster was prepared setting forth a summary of the provisions of The Noxious Weeds Ordinance. A copy of this was sent to all the postmasters, statute labour overseers, secretaries of school districts, Hudson's Bay and Mounted Police posts, and a number of private individuals interested in the eradication of noxious weeds.

Realising the danger of the spread of noxious weeds by the railways, a letter was addressed to the managers of the various lines operating within the North-West Territories, pointing out that there is a consider-

able element of danger in foul seeds being introduced into communities hitherto free from the weed pest, by such seeds, which are usually very fine, being sifted through the doors or cracks of grain cars while in transit, falling into congenial spots, obtaining a growth and then distributed by wind or otherwise from the right-of-way to the adjoining farms. Stress was laid on the absolute necessity for keeping the railway right-of-way clear of weeds. I am pleased to be able to state that the railway officials have co operated with the department and taken the question up in a thorough and vigourous manner. Copies of the noxious weeds bulletin and poster, as well as a copy of the Ordinance, was furnished each roadmaster and section foreman in the Territories, and our inspectors had special instructions to keep a sharp look out on railway rights-of-way. A few cases of negligence were reported by our noxious weeds inspectors and their reports promptly forwarded to the railway officials and the result was that in every case immediate and satisfactory action were taken.

A great many complaints were received during the season, from farmers and others, regarding the open breach of the provisions of The Noxious Weeds Ordinance by operators of elevators, mills and grain warehouses throughout the Territories. Steps were taken before the grain shipping season commenced to compile a complete list of elevators and mills, and through the courtesy of the grain exchange and railway companies no difficulty was experienced in obtaining such a list. The following circular letter was then sent to the owner or manager of each such institution:

"It has been reported that a number of mills and elevators throughout the Territories are not complying with the provisions of The Noxious Weeds Ordinance.

Believing the same to be due to ignorance of the law on the subject, I have thought it well to especially direct your attention to this matter and herewith beg to enclose a copy of The Consolidated Ordinance respecting Noxious Weeds. I may add that it is against the law to remove screenings or other refuse containing the seeds of noxious weeds from any elevator or mill, without first destroying the germinating qualities of the same. In many cases the seeds are left in a heap outside the building and become a source of danger to the surrounding country. Section 10 of the Ordinance provides a penalty for such action. I trust, that when the government inspector visits your establishment, he may find that steps have been taken to comply with the provision of the Ordinance."

We were unable to make a general inspection of the mills and elevators, principally owing to the fact that the department had not a suitable man available for this work. I would, however, recommend that this matter be vigourously dealt with during the coming season.

Considerable interest was taken in the attempts made by various parties in Manitoba and the North-West Territories to construct a stubble burner which could be be adapted to the eradication of noxious weeds, and considerable correspondence took place in this connection. The nearest approach I have seen to such a machine, is undoubtedly the one constructed by Mr. E. Canniff of Winnipeg. I had a conversation with this gentleman and he seemed very hopeful in the matter. Some years ago I understand a sum of money was offered by the Territorial Government as a prize for the invention of such a machine, and that a certain amount of expenditure was also incurred in testing the inventions of one or two persons, but the question has not, up to the present time, been solved. I understand that Mr. Canniff has already succeeded in organising a company to handle his invention and the machine, which will be sold for about $65.00, will be placed on the market during the coming year. The Canniff stubble burner uses straw, and would not, therefore, be of much practical value on abandoned lands. It appears to me that there should be a possibility of constructing an implement using gasoline or acetyline gas which would be more economical in operation

upon abandoned lands than a machine depending upon straw and stubble for fuel.

An arrangement has been made whereby Professor Fletcher, of the Department of Agriculture, Ottawa, will devote a portion of the coming summer to addressing agricultural meetings throughout the Territories on the subject of noxious weeds. Dr. Fletcher is without doubt the greatest authority on noxious weeds in the Dominion, and the department is particularly fortunate in obtaining his services even for a short time. An attempt will be made to get a good attendance at these meetings, and while travelling through the country Professor Fletcher will no doubt be able to study the distribution of weeds and to offer some valuable suggestions on the subject of the enforcement of our Noxious Weeds Ordinance.

An attempt should be made during the coming season to secure one or more collections of noxious weeds and their seeds for reference in the department and for use at the various agricultural exhibitions throughout the Territories. The "Noxious Weed Tent" at the Winnipeg Industrial Exhibition has gradually become a very valuable institution and of the greatest assistance to visiting farmers who, by studying the collection exhibited there, are often in a position to identify weeds which have appeared on their own farms, and which might, if not attended to in time, develop into very serious evils.

GOPHER DESTRUCTION.

The prairie squirrel or gopher most commonly found in the North-West Territories, is the bush-tailed squirrel. This animal is not migratory in its habits. There can be no doubt that the gopher is a very destructive animal. One frequently observes large areas surrounding gopher burrows in grain fields completely mowed down, as if a hail storm had passed over them. On the irrigated farms of the west the gopher also causes a great deal of damage by burrowing through embankments, thus giving rise to extensive washouts.

A great many schemes have been suggested having in view the extermination of these pests. The usual method is poisoning by strychnine. Experiments have, however, been carried on at the Wyoming Agricultural Experimental Station, with a view to testing the efficacy of bi-sulphide of carbon, and it is stated, that the results attained have been most satisfactory. The method adopted is to saturate a small bundle of cotton, or a ball of dried stable manure, with this chemical, roll it into the burrow and close up the opening with earth. The bi-sulphide evaporates very rapidly and being heavier than air, descends into the burrow and smothers the whole family of gophers. This chemical can be purchased in the Territories at from $3.50 to $4.00 per gallon. A gallon weighs about ten pounds and is sufficient to treat from 160 to 200 burrows. There can be no doubt that the bi-sulphide process is more effective than strychnine poisoning, apart from the fact, that there is a considerable element of danger in connection with the latter where poisoned wheat is left above ground. The only drawback to the use of bi-sulphide is the high inflammability of this chemical. It is not, however, very poisonous nor corrosive to the skin and may safely be handled with the least degree of care.

A number of years ago the Government of the North-West Territories felt the necessity of taking some action in the matter of gopher destruction with a view to assisting the farmers of the Territories in the eradication of these pests. Upon the recommendation of the members of the

Assembly gopher traps and poison were purchased for certain districts, charged up as a district expenditure and distributed to applicants through agricultural societies or agents appointed by the various members. The plea urged in favor of this action was, that the quality of the strychnine sold in the Territories at that date was very inferior while the price of the drug was unduly high. There were doubtless at that time ample grounds for action on the part of the Government. Owing to the cycle of dry years through which the Territories had then passed, the prairie had dried up materially and the gopher naturally discarded the dry "prairie wool" in favor of the succulent feed available upon the cultivated grain fields and this, of course, materially aggravated the evil.

The practice of distributing free gopher poison was discontinued last year on the grounds that the principal argument in favour thereof, namely, that strychnine of a satisfactory quality and price could not be obtained in the Territories, did not any longer apply. Another weighty reason for this discontinuance was the apathy of the farmers generally. Large quantities of strychnine were procured for certain districts and the experience was that the farmers would not even take the trouble to apply for it and it was consequently left on the hands of the Government and considerable difficulty was in many cases experienced in disposing of it. In fact, it was felt that one of the main objects of the free distribution of strychnine by the Government, namely, the elevation of the standard of purity and strength of this chemical and the decrease in its price, had practically been accomplished and it was, therefore, considered unnecessary and inadvisable and, indeed, indefensible, to enter into unfair competition with legitimate dealers in the article. It has been estimated that sixty grains of strychnine is sufficient for the destruction of over three hundred gophers. This quantity can now be purchased almost anywhere in the Territories and, if necessary sent by mail, for somewhere about twenty-five cents. Previous experience shows that very few individuals used more than two or three sixty-grain bottles during a season. In view of these facts it can hardly be successfully argued that this article, however essential it may be to the welfare of a community, which can be conveniently purchased anywhere in sufficient quantities at from fifty to seventy-five cents, should be made the object of free government distribution, to the detriment of individuals depending for their livelihood in some measure upon the sale of the same.

The question of the destruction of noxious animals is peculiarly a subject for co-operation. It is worthy of consideration, whether powers should not be given agricultural societies or local improvement districts to deal with matters such as this. It may be argued that these institutions would not feel inclined to take the question up, but if an evil is not serious enough to enlist the best efforts of a whole community, it is surely not one worthy of government aid, which, after all, is of no avail unless seconded by the organised and joint efforts of the people. If it is found in any district that there is a crying necessity for vigourous action in the way of the extermination of gophers, and if the price and quality of the strychnine sold by the local dealers are unsatisfactory, it would seem quite in order that the agricultural society for the district, furnishing as it does a ready medium for co-operation, might and *should* interest itself in the subject. Strychnine or bi-sulphide of carbon might be purchased in wholesale quantities and at correspondingly low prices, for the use of the members, and each applicant charged his proportion of the entire outlay. Great benefit would also result from discussing the subject at the meetings of such societies, where members would have an

opportunity of comparing notes as to the most practical and successful methods of attaining the object in view. Valuable information would in this manner be disseminated amongst the members and others which would have a tendency to encourage in the individual more intelligent and systematic methods in dealing with the serious question of combatting these enemies of the farmer.

DAIRY INDUSTRY.

Dairying is becoming one of the most important industries of the North-West Territories. In the easterly portion of the country, where wheat growing is more extensively followed, the interest taken in dairying naturally fluctuates with the price of wheat, and in view of the large profits made by straight wheat growing in favourable seasons, it is in some localities rather a hopeless task to rouse popular interest in this very important industry. In the westerly and northerly portions of the Territories, the matter, however, assumes a different aspect. It would be hard to find anywhere in the world a better dairying country than the foothills of the Rocky Mountains and the Saskatchewan Valley, and the settlers of these districts are rapidly turning their attention to the dairy industry. As is well known the greater number of the creameries of the North-West Territories are operated under the management of the Dominion Government. Through the courtesy of Professor Robertson, I am able to attach statements showing a summary of the business during the seasons of 1897 and 1898 of the Dominion experimental dairy stations of the North-West Territories:

SUMMARY OF BUSINESS FOR SEASON OF 1897 AT THE DOMINION EXPERIMENTAL DAIRY STATIONS IN THE NORTH-WEST TERRITORIES.

NAME OF STATION.	NO. OF PATRONS.	INCHES OF CREAM SUPPLIED.	POUNDS OF MILK SUPPLIED.	LBS. OF BUTTER MANUFACTURED.	AVERAGE PRICE REALISED AT THE CREAMERY.	MANUFACTURING CHARGE PER LB.	NO. OF DAYS IN OPERATION.	GROSS VALUE OF PRODUCT.	
					CTS.	CTS.		$	CTS.
Calgary	31	7,056	168,957	14,071	19.4	4	143	2,729	80
Edmonton	90	13,901	327,451	27,364	17.62	4	148	4,840	26
Grenfell	80	35,319	.....	39,706	17.64	4	120	7,047	20
Indian Head	61	20,362	....	22,715	17.33	4	156	3,959	21
Innisfail	81	19,143	390,645	38,621	18.87	4	150	7,304	36
Maple Creek	21	9,943	.....	9,921	20.28	4	100	2,033	99
Moose Jaw	57	35,277	191,077	49,265	17.86	4	168	8,887	74
Moosomin	113	35,331	.....	31,583	17.48	4	135	5,586	09
Prince Albert	43	8,601	261,891	20,104	16.95	4	144	3,409	34
Qu'Appelle	97	27,020	.....	25,960	18.52	4	127	4,808	85
Red Deer	66	22,079	225,067	30,148	18 59	4	150	5,639	83
Regina	74	31,864	.....	30,502	17 56	4	150	5,383	63
Wetaskiwin	47	2,669	342,980	17,691	18.49	4	122	3,306	43
Whitewood	131	48,908	.....	46,871	17.77	4	120	8,340	03
Wolseley	47	5,888	339,330	20,029	17 93	4	122	3,624	91
Yorkton	109	54,586	.....	49,352	16.74	4	144	8,362	48

SUMMARY OF BUSINESS FOR SEASON OF 1898 AT THE DOMINION EXPERIMENTAL DAIRY STATIONS IN THE NORTH-WEST TERRITORIES.

NAME OF STATION.	NO. OF PATRONS.	INCHES OF CREAM SUPPLIED.	LBS. OF MILK SUPPLIED.	LBS. OF BUTTER MANUFACTURED.	AVERAGE PRICE REALISED AT CREAMERY.	MANUFACTURING CHARGE PER POUND.	NO. OF DAYS IN OPERATION.	GROSS VALUE OF PRODUCT.
					CTS.	CTS.		$ CTS.
Calgary	59	15,627	125,186	19,389	20.25	4	168	3,926 70
Churchbridge	70	21,429	.....	22,223	18.85	4	111	4,189 21
Grenfell	77	35,179	.....	42,838	19 04	4	149	8,156 47
Indian Head	6	3,800	.....	3,994	20.00	4	128	798 62
Innisfail	105	39,003	437,405	57,717	20 40	4	184	11,775 55
Maple Creek	15	11,621	.....	12,362	20.06	4	158	2,479 99
Moose Jaw	39	31,580	.....	37,999	20 00	4	179	7,603 53
Moosomin	47	14,567	.....	14,523	18.55	4	134	2,695 28
Prince Albert	31	10,717	7,237	12,644	18.51	4	143	2,340 64
Qu'Appelle	66	26,713	.....	26,188	18.70	4	150	4,898 22
Red Deer	76	28,253	217,572	42,878	19.84	4	184	8,507 54
Regina	49	24,301	.....	25,450	19.05	4	157	4,849 26
Saltcoats	76	21,343	.....	18,779	18 15	4	139	3,409 85
Saskatoon	18	8,631	16,581	10,202	18.92	4	153	1,930 49
South Edmonton	48	12,346	115,036	17,068	18.80	4	156	3,209 19
Wetaskiwin	58	8,576	456,914	27,136	20 08	4	192	5,449 65
Whitewood	85	41,271	.....	44,308	19 07	4	166	8,450 52
Wolseley	35	2,688	281,611	13,873	18 76	4	146	2,603 35
Yorkton	91	38,961	.....	35,413	18.26	4	137	6,466 61

RECAPITULATION.

	1897.	1898.
Number of Patrons	1,148	1,051
Pounds of butter manufactured	473,903	484,984
Number of days in operation	2,199	2,934
Gross value of product	$85,264 15	$94,040.67

The greatest obstacle to successful dairying in the North-West Territories at the present time, is the absence of good dairy cows, and it is worthy of consideration whether some organised effort could be initiated by agricultural societies, or the creamery patrons themselves, having in view the importation of thoroughly good milking cows from the provinces of Ontario and Quebec to be sold to patrons of creameries or such as signified their intention to become patrons at cost price, landed. The scheme for the importation of pure bred bulls, referred to under a different heading, should be a valuable factor in the improvement of the dairy stock of the North-West, but the correspondence with intending importers up to date reveals a disappointing lack of interest in the importation of thoroughbred dairy sires.

A great deal of discussion has recently taken place in the agricultural world regarding the evolution of the "dual purpose" cow. This is precisely the animal required in the Territories. It is found almost as difficult to induce ranchers to engage in dairying as to persuade the wheat farmer to patronise the local creamery. If such an animal as

the dual purpose cow can be successfully produced *as a breed*, this difficulty would to a very large extent be overcome. The statement has, however, been made that such an animal has existed for generations in Ayrshire, Scotland. The practice of Ayrshire dairy farmers is to purchase young and well-bred Ayrshire milk cows and to cross them with a Shorthorn bull. Although the first cross is a fair milker, it is evident that the tendency of such operations is to breed into beef and out of milk, and the general practice is, therefore, when the cows, through old age or otherwise, become unprofitable, to send them to the block and purchase younger stock of the same breeding to take their places. The steers produced from the Shorthorn-Ayrshire cross are thought very highly of by the butchers. Great things are claimed for the milking strain of Shorthorns and it is probable that this animal combines the beef with the dairy qualities.

CHEESEMAKING INDUSTRY.

In addition to the experimental dairy stations operated under the auspices of the Dominion Department of Agriculture, there are a number of concerns in the Territories engaged in the manufacture of cheese. The following is, I believe, a complete list of the same:

The White Swan Butter & Cheese Manf'g Co., Bowden, Alta.
The Springbank Cheese Factory, Springbank, Alta.
Jonasson's Cheese Factory, Tindastoll, Alta.
Benedicktson Cheese Factory, Tindastoll, Alta.
Clearwater Cheese Factory, Clearwater, Alta.
Young Bros. Cheese Factory, Springbank, Alta.
Spring Creek Cheese Factory, Valley, Assa.

Glen Adelaide Cheese & Butter Manufacturing Association, Glen Adelaide, Assa.

Legare's Cheese Factory, Willow Bunch, Assa.

In order to make the manufacturing of cheese in the Territories a success, it would, I fear, be necessary to increase vastly the milk producing capacity of our dairy cows. As before stated, the quality of milch stock is deplorably low and as the raising of a calf in this country will always be a necessary adjunct to the prosecuting of dairying or cheese making, it stands to reason that the latter is a business that will not commend itself to Territorial stockmen until our cows have been brought up to the point where they will support a calf and in addition give a sufficiently large quantity of milk to make it worth while patronising the cheese factory. It is feared, however, that the day of successful cheese factories is yet far off.

Reports from a number of the factories mentioned are not at all encouraging.

The output of the Glen Adelaide institution did not reach one-half of last year's make. The price paid for milk was only 40 cents per 100 lbs., as compared with 53 cents during 1897. The price realised for the finished article this year was higher than that of last year, and the reason for the lower price paid for the raw material this year must be looked for in the smaller supply of milk obtained, smaller make and consequently proportionately larger expense of manufacture. The secretary of the association is of the opinion that nothing short of the total loss of the wheat crop will bring the farmers to realise their shortsightedness in allowing concerns of this character to fail for want of patronage.

The Spring Creek cheese factory of Valley, Assiniboia, attributes the smaller output of recent years to the establishment of a creamery in the vicinity. The company was incorporated in 1890 and commenced active operations in 1891. The annual make of cheese ranged from 71,000 lbs. in 1895 to 10,000 lbs. in 1898, the lowest on record. The price paid per hundred pounds of milk ranged from 64½ cents in 1891 to 20 cents in 1896. The price in 1897 was 47 cents per hundred and during the past year 46 cents.

Legare's cheese factory at Willow Bunch had a fairly prosperous season. The make for the year was 35,000 lbs. and the price paid for milk 75 cents per hundred, which, however, was taken out in merchandise by patrons.

A report was received from the Springbank cheese factory at Springbank, Alta., which institution has been in existence for some seven years. The make for 1898 was somewhat above 15,000 lbs., a little in excess of the 1897 make. The patrons were not paid on the basis of a milk supply but in accordance with the quantity of cheese manufactured. Complaint is also expressed by that establishment of the fluctuating nature of the patronage.

CATTLE.

The principal countries coming into competition with Canada in the exportation of cattle into the British market, are the United States, Australia, and the Argentine Republic. The exports from the United States are decreasing annually, and it is improbable that the cattle industry is susceptible to further expansion there. The Australian colonies are, however, making rapid progress in the dead meat trade, and may become formidable competitors in the course of a year or two. The Argentine Republic is no doubt our most dangerous competitor on the British market. That republic has, however, the long ocean voyage against it, but it cannot be denied that the systematic efforts made by Argentine breeders to improve the quality of their stock, will tell very strongly in their favour in the course of a few years It has recently been stated that the Government of that republic has decided to bonus the exportation of cattle. If such is done, it will no doubt give great impetus to the trade.

The cattle industry of Canada is at present labouring under the disadvantage of heavy transportation rates. It is estimated that it costs $6.00 less per head to ship cattle from the western States to Liverpool than from Ontario to the same point, and it is probable that the difference in transportation rates from western points south of the line and on this side are proportionately great. We may, however, hope for an increased and profitable trade with more favourable rates, which the volume of the business will soon demand and procure.

While south-eastern Assiniboia, eastern Saskatchewan, and northern Alberta are principally suited for cattle breeding in connection with mixed farming, settlers in the Yorkton and Battleford districts, western Assiniboia and southern Alberta have hitherto bent their whole efforts towards the business of cattle raising. A very large number of young stockers have been sold from the farming portions of the Territories and the Province of Manitoba to western ranchers, and I believe this is a practice which should be encouraged. Large prices have been paid for yearling stock, and in spite of the outcry which has been raised in the press against this system, the farmer has been only too willing and anxious to sell.

The she-stock of the farming districts is generally well cared for owing to the necessity of stabling during the winter, which again involves regular feeding and watering, and the farmer, therefore, is compelled to reduce his herd within the limits of the stable or shed accommodation and the quantity of winter feed available. This necessitates smaller numbers and enables the farmer to devote personal attention to each individual head of stock. The result ought to be a uniform high standard of excellence in the quality of calves and the minimum of casualties both among calves and dams. There can be no doubt, that if the farmer finds himself limited to a given number of heads, it will pay him better to sell his young stock, and keep nothing but productive cows and the necessary stock bulls.

The range country of the Territories is not as well adapted to stock breeding as the farming districts, unless operations are carried on under the conditions prevailing in the latter, and it is probable that the western rancher will be very slow to adopt such methods. The annual loss of early calves on the range is enormous. Attempts are, of course, made in isolated cases in the direction of controlling the breeding, by herding the cows during the breeding season, but it is obvious that this would be out of the question on a large scale, and the raising of young stock therefore; will continue to be a very precarious undertaking under range conditions Although there can be no doubt that stock can be more economically bred and raised to the age of one year by the farmer, the latter cannot compete in the cost of maturing this animal with the ranching districts of the Territories, where a steer can more or less shift for himself after attaining this age, until he is ready to turn off. The introduction of irrigation into many districts is an important factor. It has been well said, that the carrying capacity of the western ranges is only limited by the quantity of winter feed it is possible for the rancher to provide for weak stock. It is, therefore, obvious that the effect of irrigation extensively practised will be to increase this carrying capacity enormously.

The practice of shipping stockers from the farm to the ranche must, therefore, be conceded to be in accordance with business principles, but in order to bring the export stock to perfection, the unfinished cattle from the western ranges should be returned to the farm for stall feeding before being finally shipped to the old country market. Every farmer has, in most years, an abundant supply of inferior coarse grains on hand, and one can conceive of no more profitable manner of disposing of the same than the finishing off for the old country market of range beeves, which are usually generous and profitable feeders. If such a business developed the transportation companies would doubtless extend a "feeding-in-transit" rate to shippers.

The losses on the range during the season 1897-98 were, generally speaking, a great deal heavier than during the season 1896-97, and the calf crop was also smaller than that of the preceding year. I am dealing elsewhere with the subject of the general health of cattle.

Lethbridge District.—In the Lethbridge district the loss during the season 1897-98 amounted to about 10 per cent. and equalled that of the preceding winter. Both this year and the year before, the month of November was unusually severe, and was ushered in by a heavy snow fall which told severely on stock, as the winter coat had hardly made its appearance after the warm weather of September and October. The calf crop reached about 40 per cent., and did not vary much from that of previous years. The importation of pure bred bulls showed a healthy

increase. The pasture in this district cured fairly well, though, owing to late rains, it was hardly in an ideal condition; but the supply of hay on the hands of the ranchers was larger than that of previous seasons and compared favourably in quality with the same.

Cardston district.—The losses in the Cardston district, where the cattle are owned by smaller proprietors, were, as might be expected, smaller than in other portions of the country. The calf crop was not a satisfactory one, but the importation of pure bred stock showed a great improvement as compared with that of the previous season. The pasture cured satisfactorily and some fifteen thousand tons of first class hay was put up.

Macleod District.—The losses in the Macleod district are reported to be heavier this season than last. The calf crop, both this year and last, was a very inferior one, but an experiment is now being made in this district in attempting to hold up the bulls until July, which it is hoped, will result in avoiding early calves, which is the most fruitful source of loss. The range grass is said to have cured well owing to the fine September weather and the feed put up was better and of larger bulk than that of last year; although some was damaged on account of rain during the haying season. The importation of pure bred bulls was very satisfactory and it is stated that the effect of the new blood which had been introduced during late years, is begining to be very apparent in the new calves.

Pincher Creek District.—The losses for the year in the Pincher Creek district are estimated at about three per cent., while the increase on the range is said to be slightly lower than that of preceding years. Complaints have reached the department that sufficient headway is not being made in the importation of pure bred stock into that district, and that the range cattle are deteriorating accordingly. The pasture did not cure satisfactorily owing to the wet fall, and it is therefore probable that a larger percentage of losses than usual will occur this spring. A larger quantity of hay, and of better quality than that of last year, was put up in this district but the greater portion of it was shipped west over the Crow's Nest road, owing to the high prices offered in the Kootenay district, and will, therefore, not be available for winter feed.

High River District.—The losses of range stock in the High River district during the winter of 1897-98 is estimated at ten per cent., being greatly in excess of that of 1896-97. The calf crop was a very small one, owing to the continuous spring storms. One of the largest ranchers in the district estimates a loss of seventy-five per cent. of March and April calves. The calf crop of this year is estimated at somewhere about fifty per cent. of the total number of breeding stock as compared to seventy per cent. of 1896-97. In this district I am again in a position to report an increase in the number of pure bred bulls brought in over that of previous years. The winter feed put up in the High River country during the present year exceeded in quality and quantity that of the previous year.

Mosquito Creek District.—The loss in range stock in the Mosquito Creek district is estimated at from ten to fifteen per cent. During the previous year the loss of grown cattle was greater, while the loss of young calves and weak stock was much smaller. The increase for the present year is estimated at about fifteen per cent. and is ten to twenty per cent. less than last year's increase. The importation of pure bred bulls show a considerable increase. The grass on the open plains cured fairly well, but was cut down by frost in the foot hills early in the season. The quantity of hay put up was larger and of a better quality than that of the preceding year.

Willow Creek and North Porcupine Hills.—The losses in the Willow Creek and the North Porcupine Hills district are reported to be at least twice as great during the present season as that of the previous year. They are placed at all the way from six and a half to ten per cent. of the total number of range stock, and a larger loss of early calves this year than last, is also reported from this district. The reason given for this, is the prevalence of bad spring storms. The increase in the number of pure bred bulls brought into the district is very marked, and more attention is being paid to the quality of male stock. The grass cured well during the early fall, and good winter feed was available all over the district. The quantity of hay put up was at least as large as that of the preceding year, but the quality probably not as good.

Sheep River District.—From the Sheep River country the losses are reported to be greatly in excess of those of the season 1896-97 and the increase is estimated at about sixty-five per cent., which is, on or about, equal to that of last season. The number of pure bred bulls brought in shows a great excess over that of previous seasons. It is stated that the grass in this district did not cure well owing to the wet fall and early frosts; but the quantity and quality of hay put up is most satisfactory. A large amount of bromus, timothy, rye and oats was grown under irrigation.

Red Deer District.—In the Red Deer country, as well as in the northern portion of Alberta, the cattle are, of course, managed more or less under farming conditions. The losses were consequently smaller than in the southern country, and the increase larger. The importation of pure bred bulls shows a satisfactory increase, and the quantity and quality of hay put up was larger and better than that of 1897. Generally speaking, the crop of hay available was none to plentiful.

Morley District.—In the country lying west of Calgary, the losses are, contrary to the experience in other portions of the country, estimated to be greatly below those of last year, whereas the calf crop was, in accordance with the record elsewhere, smaller. A large number of pure bred bulls was imported and the pasture is reported in good shape. The quantity and quality of hay put up is larger and better than that of the previous year.

In the district east of Calgary, the percentage of loss was quite double that of the previous year, and the calf crop about ten per cent. smaller. A large number of pure bred bulls were, however, imported into that district. The pasture did not cure satisfactorily owing to the wet fall and the early frosts; but the usual quantity and quality of hay was put up, and as everybody seems to have plenty no apprehension as to losses need be anticipated during the coming spring.

Maple Creek District.—In the Maple Creek district the losses are estimated at ten per cent., or three per cent. higher than those of last year. The calf crop is estimated at fifty-seven per cent., or eight per cent. smaller than that of last year, while the importation of pure bred sires shows only a slight increase over that of previous years. The pasture cured satisfactorily, and the average quality and quantity of hay was put up

Medicine Hat District.—In the Medicine Hat district the losses of the present season were, on or about, equal to those of last year, but the calf crop was smaller than that of 1896-97. The importation of pure bred bulls into this district has assumed a more favourable aspect. The grass, generally speaking, cured well, and the quantity and quality of winter feed available is considerably above the average.

Wood Mountain District.—A very small percentage of loss is reported from the Wood Mountain district, which is only a repetition of previous years' experience. The increase there was about seventy-five per cent.of the total number of breeding stock, and although the importation of pure bred bulls shows an improvement, there is still much to be desired in that line. The pasture seems to have cured satisfactorily, and the quantity and quality of winter feed available seems to be up to the average.

Battleford District.—The losses in the Battleford district are estimated to be below two per cent., which makes a very favourable comparison with the 1896-97 season. A very large percentage of the cattle, however, are shedded and winter fed which accounts for the low percentage of casualities. The increase here is estimated at about ninety per cent., which also compares very favourable with that of last year. The importation of pure bred bulls, owing to the bad transportation facilities, has not been satisfactory in this district, in fact none were brought in; but there is now a number of female stock available in the district, and it is hoped that new blood will be introduced more freely in the future. The pasture was quite up to the mark during the summer season, and an abundance of winter feed was put up.

Prince Albert District.—In the country contiguous to the Prince Albert line the same conditions prevailed as in the Battleford district, and the losses, consequently, were very low and the increase satisfactory. An epidemic of abortion in cows is reported from Dundurn, which was responsible for a smaller increase than usual. The importation of pure bred bulls was very unsatisfactory. It is hoped that the privileges offered by the Government for the cheap transportation of this class of stock will be largely taken advantage of by stock raisers in the district. The quality of hay available for winter feed as well as the quantity of the same is far above the average.

Moose Mountain District.—The conditions in the Moose Mountain district, where a large number of cattle ranged, are somewhat similiar to the Prince Albert and Battleford districts, and the losses will not, as a consequence, vary much from those districts. The percentage of increase is reported to be very satisfactory, although not quite up to last season's. I am pleased to be able to note a very marked increase in the number of pure bred sires brought into this district, which is estimated to be at least twenty per cent. above that of previous years. The pasture in the district was very fair during the season, but owing to the heavy rains the quantity and quality of hay put up is not up to the average.

North-East Assiniboia.—This portion of the country is rapidly developing into one of the most important stock districts in the Territories. More cattle were shipped from Yorkton during the year than from any other point in the Territories, the export reaching almost 6,000 head. A very large number of thoroughbred shorthorn bulls were imported. The range did not cure as well as usual, which, however, did not affect cattle much, as they are either stabled or shedded during the winter in this portion of the country. A very plentiful supply of feed of good quality was put up. The calf crop was, as might be expected, as large as usual.

IMPORTATION OF PURE BRED BULLS.

It has long been been a notorious fact that the quality of the cattle of the North-West Territories is deteriorating from year to year, at least in

the westerly portion of the country, and it was felt that any scheme having for its object the facilitating of the importation of pure bred sires would meet with general approval. The great distance from Ontario points to the North-West renders the importation of single animals out of the question. An organization was, however, perfected by The Dominion Cattle Breeders' Association, with the assistance of the Ontario Government, whereby stockmen in the west could purchase single animals in the east, send their notification of this transaction to the secretary of the association, and when a sufficient number has been received, a car was chartered from Ontario to the farthest point of delivery in the Territories and a careful and painstaking man engaged to accompany the shipment and distribute the bulls at their various destinations. This arrangement, however, was not very widely advertised and the average western stockman was not even aware of its existence, to say nothing of the details under which the plan was worked out. This department, therefore, placed itself in communication with the secretary of the association above mentioned with a view to assuming the Territorial organisation of the scheme in question, advertising it thoroughly, and generally assisting in the carrying out of its objects. In addition to this, a vote of $2,500.00 was included in the past year's estimates to be expended upon the encouragement of the importation of pure bred stock. It was decided to utilise this amount as a bonus towards the importation of pure bred bulls under government supervision, and the following advertisement was inserted in all the Territorial weekly papers:

NOTICE TO STOCK RAISERS.

Arrangements have been made by this Department whereby stock-raisers and farmers in the Territories can import, under Government supervision, thoroughbred cattle purchased from breeders in Ontario, at a uniform cost of Five dollars per head for transportation to the nearest railroad points, including care on journey.

Particulars as to conditions under which such importation will be made, may be obtained by applying to the undersigned.

A very large number of enquiries were received, and the following memorandum and forms of application were sent in reply to such applications:

MEMORANDUM:—Importations of pure bred stock under Government auspices will be carried on under an arrangement with the Ontario Government whereby the stock, which must be delivered at some convenient point on a line of railway in Ontario, is gathered and forwarded by carload or trainload to the west in charge of a reliable man, and distributed at the various destinations. The total cost per head will probably be from $16.00 to $18.00, but the Government defrays all expenses over and above the sum of $5.00. As soon as parties are in a position to make final application to the Department for the transportation of stock, blank forms will be supplied them, which are to be filled out, verified by statutory declaration and returned to this Department, accompanied by the sum of $5.00.

Stockraisers availing themselves of this offer will have to make their own arrangements in the east, through friends or otherwise, regarding the purchase of their stock.

It is not necessary for applicants for transportation of stock under this arrangement to make their purchases in the east prior to filing their applications with the Department. There is likely to be a greater number of applications received than the vote will cover, and the basis upon which the said applications will be dealt with will be: First come, first served. If anyone desires to obtain the bonus in question he should file his application at once and he can then make his arrangements regarding the purchase of his stock in the east at his convenience.

It is probable that the shipment will not take place until May or June, 1899, so that there will be ample time to complete such arrangements. Lists of breeders will be furnished by the Dominion Cattle Breeders' Association upon application to this Department.

Definite regulations governing these importations have not as yet been framed, and cannot be until the Department is in a position to form an estimate as to the number of applications which will have to be considered; but it is likely that no person will be given a bonus on more than one head of stock, and it will probably also be decided to pay such on male stock only. Although the payment of a bonus towards cost of transporta-

tion may be so limited, in cases where two or more head, males or females, are required by any person, there will probably be no objections to undertaking the transportation of the same at the actual cost price to the Government, paying however, bonuses on one bull only. All stock will be accepted for transportation at owner's risk only, but every precaution will be taken to ensure safe delivery.

APPLICATION FOR THE TRANSPORTATION OF STOCK.

SIR,—I beg to make application for the transportation of a thoroughbred bull under Government supervision, and herewith enclose the sum of $5.00 in full payment of all charges delivered at.... being my most convenient railway station, in accordance with the offer made by the Government.

I hereby agree to have the bull in question delivered at a railway station in Ontario at any time during May or June, 1899, arranged by the Department, and also to file the declarations "A" and "B" required by the Department on or before the 15th day of May, 1899. It is further understood and agreed, that I assume all risks of loss or injury to the animal during transit, not chargeable to the transportation company, and that failure on my part to comply with these requirements forfeits my claim to reduced transportation of the said animal and entitles me to have the $5.00 deposited herewith, refunded.

PURCHASER'S DECLARATION

in connection with an application for the transportation of stock by the North-West Government.

I, of in the Provisional District of having made application for the transportation of a bull do solemnly declare :—

(1) That I am a *bona fide* resident of the North-west Territories engaged in the business of stock breeding and the owner of, or own an interest in head of breeding cows.

(2) That I am importing the said bull for the service of my cows and neither directly or indirectly for immediate barter or sale.

BREEDER'S OR SELLER'S DECLARATION

in connection with an application for the transportation of stock by the North-West Government from Station to the North-West Territories.

I, of in the County of Province of having sold a thoroughbred bull to of North-West Territories, do solemnly declare

(1) That the name of the said bull is

(2) That he is sired by No. Herd Book Volume

(3) That the name of his dam is No. Herd Book Volume

A very large number of applications were not anticipated during the first season, the experience being, that the public is rather slow to utilise such privileges until the conditions in connection with the same are thoroughly understood; but the number of applications received up to date has nevertheless been satisfactory, and it is hoped that a successful shipment will be made during the coming spring.

I may say that the average cost of transportation from Ontario points to points in the west has been from $16.00 to $18.00 per head, including transport, feed and attendance. This, of course, involves a Government expenditure of from $11.00 to $13.00 per head in the way of a bonus. It is, however, probable that owing to shunting charges in connection with the gathering and delivery of single animals, the expense may be somewhat higher. The Canadian Pacific Railway Company has, however, been approached under your direction with a view to obtaining a refund of these charges. If the policy is continued in the future, by

shipping a train load a very considerable saving could be made in the freight, shunting charges, wages of attendants, feeding, etc., better time could be made on the trip and the greater safety of the stock insured. It is believed that the cost could be reduced to an average of $15.00 per head, all told.

HORSE BREEDING.

The problem as to whether the invention and perfecting of mechanical motive power will injuriously affect the horse market has no doubt presented itself to every horse breeder in the Territories, and a superficial review of the facts of the case would seem to convince one that apparently such must be the inevitable result. This verdict should, however, only be accepted with caution. When steam power was first utilised and superseded the cumbersome stage coaches, thus throwing a large number of horses out of employment, the unanimous prediction was that we were fast approaching the "horseless age." The result, however, was quite at variance with anticipations and, until within very recent years, the prices of well bred horses were higher than ever.

Draft Horses.—The tendency at present is towards the introduction of electric and steam motive power on the farm. Great strides have been made in the construction of plows operated by such power, but the greater portion of the work on the farm is of such a nature that only horse power can be utilised in performing it. The heavy horse is equally indispensable in the lumber woods, the mining camp, upon the construction of public works, or indeed any other class of heavy draft work, and the breeder of this class of horses may, therefore, regard with equanimity the future of his industry.

The market price of heavy horses remained in a satisfactory condition throughout the period of low prices which prevailed during recent years. The North-West possesses a market for heavy draft teams unequalled in the world. The mining districts of the Kootenay require large numbers of this class of horses and it would be interesting to study statistics showing the importation of heavy draft horses from Ontario into the Province of Manitoba and Eastern Assiniboia. The reason why the western portion of the Territories is not benefitting from this market to the fullest extent is the fact that it is almost an impossibility to obtain marketable horses there. When a farmer in the wheat growing districts of the Territories and the Province of Manitoba requires a team, he has usually very little time and still less inclination to feed such a team up and have it properly broken and handled. The team required is one fit to go into the collar at once, as time is valuable particularly in the spring of the year. The cost of feeding horses in the Kootenay country is very large, and one can readily understand that if a horse is sold in that district it would entail a great loss if he were laid off work with sore shoulders or from any other avoidable cause. The current price of hay is about $25.00 per ton and oats in proportion, and the amount earned by a team is proportionately large, and so is the amount lost, if the team must be laid off. Success in horse raising will never be attained by Territorial breeders until they have been fully educated up to the idea that before a team is fit to be sold, it should have at least two or three months grain feeding, be thoroughly broken, and understand what is required of it. The objection may be raised that such would entail undue expenditure. I do not think, however, there is much force in this contention. The fact remains that if Territorial breeders aspire to profit by our ready market

and to obtain the highest market price for their produce, they must be in a position to meet the requirements of this market. Such would no doubt involve the raising of horses under somewhat different conditions to what is done at present. The colts must be shedded and grain fed during the first two winters in order to attain their proper growth. No more horses should be raised than could properly be looked after, and in connection with the raising of these horses, some farming should be done, in order to utilise profitably the teams intended for sale and get them used to the various classes of work which will be required of them when finally sold. By carrying on farming operations on a small scale the breeder would be able to raise his own coarse feed, to feed oats without any money outlay and to get his horses properly broken without the performance of aimless and unprofitable work or the unnecessary expenditure of time.

Coach Horses.—The people patronising this variety of horses are still as liberal customers as ever they were. A large number of this class of horses is required in the United States, Belgium and Great Britain. Market reports indicate, however, that it is essential to combine size with quality. The ideal coach horse has not yet been produced in the Territories in marketable numbers.

Light Harness Horses.—This class of horses has probably suffered more from the changed conditions, namely, the advent of the bicycle and motor car and cheap transportation generally. There is, however, a fair demand for strictly first class light harness horses, but the market is purely a local one. Hardly a sufficient number of these horses is produced in the Territories to warrant outside buyers in coming in, and conceding that the number is here—owing to the absolute indifference of the breeders to the question of the proper breaking and handling of their young horses—they cannot be sold as suitable for export.

Saddle Horses.—A great deal might be said respecting the breeding of saddle horses. In October 1892 a petition was forwarded to His Excellency the Governor General of Canada, signed by a number of representative horse breeders of the western portion of the Territories, from which I beg to quote the following:

In support of our petition and representation we beg to state that there are now in Alberta many thousands of horses awaiting a market, a fair percentage of which, we believe, are suitable to train for army use, and that the great increase which has taken place in the horses of the district during the last five years, as well as the marked improvement in the class of horses now being raised, is a guarantee of the great possibilities of horse breeding in this country. Notwithstanding the uncertain sale for horses here, the ranchers have steadily continued to improve the breeds by importing very considerable numbers of thoroughbred stallions. This would no doubt be done on a larger scale as soon as a systematic method of marketing them was established. The fact that the Canadian Pacific Railway main line and some of its branches run through this horse ranching country, furnishes great facilities for distributing trained horses on very short notice to any part of the empire.

We are informed that great loss is caused to horse shippers and much delay and inconvenience to the Government through a considerable percentage of the horses brought to England for the army being rejected from being untractable or otherwise unsuitable for the service, and that there is great unnecessary expense in buying horses in small numbers wherever they can be found, all of which would be entirely avoided if the horses were trained where raised.

The character of the climate at Calgary is such that outdoor training could be carried on during most of the year. Sufficient land to make an ample training farm, say 1000 acres, would in all probability be donated to the Imperial Government near to Calgary so that those persons engaged in purchasing, training, shipping, etc., would enjoy all the conveniences of living at an inland English town. The necessary buildings could be erected here of wood or stone for not more than one-half the cost of putting them up in England, while provender for horses and food for the employees of the station would cost a great deal less than at home. No healthier place exists in the empire, on which the sun never sets, than Alberta. The establishment of such a post here would greatly strength-

en the ties of national feeling between the Territories and the mother country, and make every army horse cost at least £5 less than at present.

Major General Strange and other well known officers were very favourably disposed towards the proposed erection of a remount depot for the imperial army in the Territories; but I am not aware that any action was ever taken by the imperial authorities on the suggestion. The petition in question was very widely circulated, but it is probable that the adverse report of Colonels Ravenhill and Philips upon the class of horses available in Canada for army purposes was still rankling in the minds of the powers that be. Colonel Ravenhill travelled through Canada in the fall of 1886, and below I have thought it well to quote an extract from his report:

. . . We think it right you should be informed that during our visit to the Dominion, which occupied 167 days, we travelled 14,755 miles, we examined 7,674 horses, of which we registered to look at a second time 1,025, with the result that we were only able to purchase for the Government 83 horses.

The prices of the whole of these were very reasonable and moderate and it was no question of money in the majority of cases which prevented our purchasing in large numbers.

We found that a great portion of horses met with of the size and sort suitable for British military purposes were unsound or blemished, from the farmers over-working their stock when too young, thus breaking down the young ones before they have developed into horses.

The attention of breeders and farmers cannot be too strongly drawn to this serious deterioration, as when the mares come to be bred from, their ills are transmitted to their young stock.

The number of faulty and unsound stallions in districts is also great, and creating much harm.

A malformation in the Canadian horses which might advantageously be brought to the notice of breeders is that their quarters are short and very drooping, a serious defect in a military horse. Indeed we had to reject as unsuitable a considerable proportion on this account; this is not only a great dissight, but where a mounted soldier has to carry a kit on a horse's back it amounts to an insuperable objection. It has arisen from the too extensive use of the American trotter for stud pusposes, this defect being very apparent in that horse. This is an additional reason for the more continuous introduction of the English T. B. or such horses which are very straight in their backs and quarters, with tail set on high.

Of course, the American dealers do not take away the worst of the horses, and purchase many very valuable mares, leaving in the Dominion the unsound, malformed stock to be bred from, which, put to unsuitable and in many instances unsound stallions, transmit to their progeny their various parental ills, for unsoundness in a horse is as surely hereditary as consumption, cancer, scrofula, general weakness or unsoundness is among the human race.

It thus becomes a question whether the Canadian Government cannot afford some direct help to this very valuable industry, so needful and remunerative in time of peace, so requisite and indispensable in time of war; and it is suggested on somewhat similiar grounds as has been successfully established in Australia, there should be an inspector of horse breeding operations in Canada. . . . The consequence is that it is quite the exception when a horse with lengthy rein and quarters, good withers and length sloping shoulders, suitable for riding, is met with, this strain being only procurable by a judicious admixture of the T. B. horse which should be liberally subsidised by Government with extensive premiums for all that are sound, of good size, bone, colour and action such as will provide the requirements of the western market.

(The importation into England alone is over 17,000 horses annually, all from foreign sources, so that this trade is worthy of consideration.)

What has been said respecting the horses in Canada West is also applicable to those bred on the ranches, where excellent mares of size, colour and quality are to be met with which require judicious weeding out and then mating to T. B. horses with bone, power and action.

In a report upon the market for American horses in foreign countries submitted in September last to the Congress of the United States, Secretary Wilson of the Washington Department of Agriculture quotes an interview with Major General C. A. Gore, Inspector General of Remounts:

I buy about 2000 remounts yearly. Between four and five per cent. of these horses are Canadian or American. We do not distinguish between the two in our records, but the majority of such purchases are Canadian. The Canadian is the better horse for army purposes. The principal fault I have to find with the American horse from my

standpoint is his shape. He is too long in the body; his tail grows too low down on his body, it should be nearer his back. The horse is thickest through at the hips, he should be the thickest through at the buttocks. His hocks, as they should not, curl in, and his legs are too thin. He is, from an army standpoint, "gawky" looking. He is ragged though docile tempered and better trained than Irish or Hungarian horses. He seems to deteriorate on the voyage over, anyway he is little good until he has been here a year. Even then he does not furnish well—never gets his ribs cut round. Further, he does not last well in the service. We have some in the artillery, none in our cavalry.

I have been buying a few every year for some years, though not so many since 1895, as the investment was not a good one. Canadian horses are hardier, better able to go without forage when doing severe picket duty than American horses. By far the best American horses we get come from Kentucky, where, I believe, they are bred in a limestone country. I believe with the Irish breeders that a horse has little chance of being a good horse that is not bred on a limestone soil, for he will be deficient in bone.

We have no prejudice against American horses, we buy anywhere, the bulk of all our horses coming from Ireland. For service in South Africa we bought in South America; for the Egyptian campaign we bought horses in Hungary. We shall be glad to purchase American horses if the breeders will send in the proper animals—a short, low horse, thick, strong flanks, good high tail, shoulders not so necessary as buttocks, ribs rounded out so as finish well, and better shaped legs—not so thin and straight, not incurving. Horses with these characteristics and with more stamina, if sent here, would find a ready market for army purposes.

It might be well to note that a remount commission for the imperial service is maintained by the British Government in the Argentine Republic. The commission which purchases horses there for the use of the troops in Africa, consists of two officers, who are advised by two veterinary surgeons. During 1898 some 1,500 horses were purchased of the following classes:

Cavalry.—A well bred horse, 15 hands 1 inch to 16 hands high, and bred from thoroughbred sires and half bred mares.

Artillery.—A coarser bred horse than the former, with more weight and substance and less quality. 15 hands 2 inches to 16 hands high.

Cobs.—From 14 hands 1 inch to 15 hands high. These are of a coarser breed; weight carrying animals for mounted infantry.

The prices paid by the commission last year were somewhat higher than the previous year's prices, which was largely due to the depreciation in gold. It is said, however, that the number of desirable horses are rapidly decreasing in that republic, particularly cavalry horses. During 1898 the price paid for cavalry horses ranged from $100 to $250, for artillery horses from $100 to $200 and for cobs $70 to $80.

It would be well if Territorial breeders would pay particular attention to the remarks of Major General Gore and Colonel Ravenhill. I am absolutely certain that a most valuable trade could be built up if we were in a position to supply the right article. The day of "broncho busting" has passed, never to return again, and the man who wishes to make a success of horse breeding should raise no more horses than he can thoroughly handle, and have for his breeding stock the best that his means will admit of. Horse raising on a large scale, particularly the raising of light horses, is a waning practice. The violent system of breaking the horses necessary to adopt where the time and help is limited, the improbability of ever getting them thoroughly broken for city work and accustomed to being handled after they have spent four or five years of their lives roaming over the prairies in comparative or absolute independence, the accidental and often injudicious mating, the impossibility of handling every young colt in a large band; these are facts which in themselves are serious enough to at once condemn the ranch system of horse breeding now in vogue. The native broncho which is now raised in large numbers in the Territories is an animal nobody wants for either pleasure or work. He has, like most other animals, his redeeming qualities, but he is fast being crowded out by better bred beasts. On account

of his low price, he has in the past, been the chief cause of demoralising the local market.

The past season has been a fairly prosperous one for Territorial breeders. Prices have been uniformly good. As a matter of fact, I do not think there is a single country in the world able to compete with the North-West Territories in the cost of horse breeding, and we may therefore reasonably rest assured that now, when the market seems to have found its level, the future has bright things in store for our breeders. When other countries are conducting horse breeding operations at a loss, the Territorial breeder is still in a position to make a fair profit. The colt crop during 1897 and 1898, although not as good in most portions of the Territories as that of 1896 and 1897, was still satisfactory, and the number of mares served during the past year was greater almost everywhere than that of the preceding year.

I am pleased to be able to state that although the number of stallions imported into the Territories was comparatively small, the quality more than made up for the deficiency in number. Among heavy draft sires brought in should be mentioned Prince Mahommed, imported by J. M. MacFarlane, of Baljeannie, Saskatchewan. This horse is sired by Prince Patrick, out of Margaret McGreggor, and should prove a valuable acquisition to his neighbourhood. Mr. J. A. Turner of Millarville, Alberta, also brought in a small shipment of excellent Clyde stallions from the Province of Ontario. Amoung these might be mentioned an extra well bred yearling from a daughter of the champion mare of the World's Fair, sired by Grandeur, twice winner of sweepstakes in Toronto.

Importation of Inferior Horses from the United States.—A very vicious practice has sprung up during the prevalence of low prices for inferior horses. So-called settlers drive large bands of horses across the boundary line and have them entered free under the customs regulations governing the importation of stock brought in by actual settlers. It is usually a very easy matter to obtain the assistance of one or more accommodating cowboys, who will take charge of the maximum number of horses which can be entered free by one person under the said regulations until the band is well across the boundary. These animals are usually of a most inferior class, and are a fruitful cause of further disturbing the already demoralised market for horses of that class. It is a great pity that steps could not be taken to put a stop to the indiscriminate importation of a class of horses which is already too fully represented in the Territories.

GOVERNMENT INSPECTION OF STALLIONS.

During the year information was gathered under your direction dealing with the control of stud horses. Several requests have been received from representative horse breeders in various parts of the country asking that legislation be prepared along these lines.

In 1893 The Horse Breeders' Lien Act became law in the Province of Manitoba. This is framed somewhat on the lines of the legislation of Illinois. The Manitoba Act merely provides for the registration in the Agriculture Department of that province of all horses standing for public service. The department then issues a certificate of breeding, and places the animal on the departmental records; provided he is registered in a recognised stud book. In this manner the public is protected against scrub horses, and the stallion owner is given a lien on the colt in order to protect him against unscrupulous breeders. It is understood that this Act has been very favourably received by the importers of pure

bred stallions in Manitoba, and I understand that there are now some 250 stallions recorded on the books of the Department of Agriculture. In order, however, to attain the maximum benefit from Government registration any legislation dealing with this matter should contemplate veterinary inspection. There are at present serious difficulties in the way of the operation of such a measure in the Territories owing to the scattered settlement, and the difficulty of obtaining technical opinion on the soundness or unsoundness of any stallion proposed to be placed upon the government record.

I may say that nearly all European countries maintain national breeding establishments by way of encouraging the breeding of high class horses. The first government stud in France was established by Napoleon in 1714 and a fine of $1500.00 and the confiscation of stallion and mare, was the penalty for using a stallion not authorised by the Commissioner of Studs. In 1867 the number of stallions owned by the French Government was 2,514, which were distributed throughout the different provinces. The report for 1897 of the Inspector General and Director of the Haras National of France gives the number of stallions now owned by the Government as 2,922. A very complete system of veterinary inspection of stallions is also in vogue, and every stallion used for breeding must be approved or otherwise by the administration for dealing with studs and provided with a certificate. The examination is made by a commission composed of the Inspector General, a practical breeder and a veterinarian of the district. The animal is then branded under the mane. No stallion less than thirty months old is examined. A policy on the encouragement of the horse breeding industry as comprehensive as that of France, could, of course, only be justified in a military country where the greatest importance is attached to having available at any time a sufficient supply of cavalry remounts. Mr. Plazen, the Inspector General of Remounts in France, however, is most enthusiastic in his praise of the principle of government inspection of all stallions. The results in France and elsewhere from such inspection are said to be marvellous.

SHEEP.

The most important mission of the sheep in early days was the furnishing of milk and the wherewithal to clothe man, and it is only within a comparatively speaking recent period that the growing of mutton has come to the front as an important industry.

Statistics on the subject would appear to indicate that the increase in the world's stock of sheep has not been very material during the last two or three decades. The estimate of Major Craigie, in his address before the International Statistical Society at St. Petersburg, shows that in the year 1867 the returns for the world amounted to 250,000,000 head, while in 1896 they only reached 280,000,000 head. It is, furthermore, a notorious fact that the present generation of sheep does not compare favourably with the animals of a number of years ago, either in point of size or weight of fleece.

There can be no doubt that the westerly portion of the Territories is eminently well adapted to the running of sheep; in fact, a very considerable tract of the range country is hardly suited for any other class of stock, owing to its scanty pasture and insufficient water supply. It is therefore, probable that, whether the financial returns from sheep ranging are satisfactory or unsatisfactory, the industry is one which is bound to assume large proportions in this country as settlement progresses.

The first importations of stock sheep were from the State of Montana, where the merino blood at that time predominated strongly, and an examination of the earliest records of prices obtained for wool at Territorial points also indicates a finer quality than our present clip of cross-bred wool. Owing to the low prices which have prevailed during recent years, however, breeders have wisely discarded the wool type and devoted special attention to the raising of mutton by the introduction, principally, of Shropshire and Oxford Down blood. The improvement of sheep does not necessarily demand years of intelligent study and effort, as is the case with cattle and horses, owing to the earlier maturity of these animals, and it is gratifying to learn that a comparison of the Territorial flocks of to-day with those of seven or eight years ago, would reveal a most marked improvement in quality from a mutton point of view.

The competition in sheep products in the British markets is becoming keener and keener and in the very nature of things it is unlikely that the sheep industry of the Territories will ever be as remunerative as the raising of cattle. The exportation of frozen mutton from New Zealand and the Australian colonies is increasing year by year, and the Argentine Republic, furnishing as it does the largest supply and the best quality mutton of any exporting country, is also to be reckoned with. During the past year 6,422,000 frozen sheep and lambs were imported into Great Britain, equal to a supply of 10 lbs. per head of population. The Australian squatter was, in his operations during past years, guided by the demand for a fine quality of wool and consequently devoted his whole attention to the improvement of his merinos, but the wool clip is rapidly becoming a side-issue and the production of mutton is being given the precedence by flock-masters. It is, therefore, evident that as the quality of mutton sheep improves in the Australian colonies, the exportation will become heavier and the prices in the British market may exhibit a tendency to decrease in sympathy with the larger imports. As bearing on the state of the wool trade during the year 1898. I have thought it well to quote an extract from The Bradford Observer, giving a resume of the business in that great wool centre:

Measured in volume—i.e., the weight of the wool passed into consumption—the trade of the year has probably been little, if any, below that of 1897, 1896 or 1894. Tested, as business men needs must, by the balance sheet of profit and loss, and it wears an ugly aspect of cadaverous leanness. And if general report is to be believed, our condition in this respect among the wool textile communities of the world is in no wise singular. In France, in Germany in the United States even, notwithstanding protection of the most outrageous tariff of modern times, the year has been a troublesome one for all who had to do with wool. The condition of other countries has, generally speaking, been good - the great iron trade especially so - and even cotton has recovered from its long depression. It may be presumed, therefore, that the wool industry has not suffered by reason of lack of money on the part of its consuming public, and the explanation must be sought elsewhere. Two reasons would appear to have operated powerfully. The people of the United States of America constitute the largest purchasing community in the world, but by reason of their habit of playing with their tariff they are impelled to buy with fits and starts. In 1895 every spindle and loom in England and on the Continent was kept busy, because it was one of America's buying years. But the cobra, having swallowed its prey, requires a long sleep; so the appetite of the United States was satisfied by the altogether abnormal meal of 1895, and it has not yet completed the process of digestion. Meanwhile, however, the productive capacity of the world has increased to meet the extraordinary demand, and consequently has felt all the more keenly the lack of it. The other chief reason is that nothing has yet occurred to stop the continuous and rapid growth in the supply of the raw material. In iron, in cotton, in wheat, the demand may be said to regulate the supply. With wool it used to be so, but it is so no longer. Australia, New Zealand and the River Plate do not care nowadays whether the world wants their wool. They have found out that it does want their mutton, and can apparently consume any quantity of it. So, as it has not yet been discovered how to grow mutton without growing wool, the wool must find an outlet somewhere; and thus we find that

in ten years the production has increased by nearly 500,000,000 pounds; or say, more than 25 per cent. Of course the wool-using population of the world does not increase at anything like that rate, and hence the wool industries are suffering from a glut, which means a continuous fall in prices. The merino sheep of Australia is not a mutton carcase —it is too small, though of fine quality—and as mutton has usurped the place of wool, the price of merino wool, by reason of its comparative scarcity, is rising. Contrarily the weight of crossbred wool is growing enormously, and as much of this wool is almost identical in character with our home-grown article, a general fall in prices is inevitable. It is in this steady downward trend of values that we shall find the reason for most of the complaints that are so universal. When values reach a record level men are apt to think that they will rise again, and act accordingly. And if they drop still further, of course they lose money. This is just what has happened all through the trade over and over again this year.

The volume of wool business in the United States, hitherto our principal consumer, shows a very large decrease. The domestic wool product of 1898 reached 26,000,000 pounds and the importation 130,000,000 pounds, leaving the wool business for 1898 below the average for the preceding eight years by 39,000,000 in domestic production and 44,000,000 in importation, or a total deficit of over 383,000,000 pounds. The reasons for this decrease may be found, in the first place, in the improvement of the cotton manufacture and in the machinery for producing wool substitutes, such as hairs and shoddies, as well as a number of vegetable fibres, and secondly, in the excessive importation of foreign wools during the closing period of the operation of the Wilson tariff, which reached over 1,000,000 pounds daily during the last three weeks. The large number of failures of wool mills in 1898 is also a factor operating adversely against the sheep business.

In the district west of Calgary the lamb crop for the past year was considerably in excess of the preceding year. The average weight per fleece was 4½ lbs. Some losses occurred through coyotes, and breeders also complained of the prevalence of a poisonous weed which caused some destruction in flocks.

In the district north of Calgary the lamb crop last year was smaller than in former years and the average weight of fleece reached 5¼ lbs. The reason for the small wool crop is assigned to the severity of the winter of 1897.

In the Maple Creek district the lamb crop was uniformly good, although, in some individual cases, not as good as last year. Four large concerns report a lamb crop of 80 per cent., one of 85, two place it at 95 and one at 98 per cent. A number of losses were ascribed to coyotes, while a foot disease is responsible for some casualties. The poisonous weed complained of in the district west of Calgary has apparently also caused havoc in the Maple Creek district in isolated cases. The average weight per fleece ranges from 5 lbs. to 6½ lbs. and is considerably below the clip of 1897.

In the Lethbridge country the lamb crop is reported at 90 per cent. and compares unfavourably with that of preceding years, which averaged 95 per cent. The losses from coyotes reached 5 per cent. and the weight per fleece over 5½ lbs. and was about the same as last year's clip.

In the Cypress Hills district the lamb crop is reported as being 10 per cent. larger than last year and is placed at 86 per cent. The losses from coyotes were larger in that district than elsewhere and had been estimated at 5 per cent. The wool crop was most satisfactory, reaching an average of 6⅜ lbs. per fleece, which is considerably above the average of past years.

In Western Assiniboia, where The Canadian Land and Ranche Company, the most extensive sheep owners in the conntry, run their flocks,

the lamb crop is estimated at 93⅞ per cent., being but a fraction below that of 1897. Here, also, coyotes are responsible for considerable loss. The average weight per fleece shows a satisfactory increase over that of last year. The clip of '98 went 6.56, while the 1897 clip only averaged 5.96 lbs.

It is interesting to note that although the 1898 wool clip for the Territories, which averaged 5.84 lbs per fleece, ranged below that of 1897 with an average of 6.49 lbs., it is still above the average for the world, which is placed by Lord Cathcart at 5.50 lbs. per fleece.

The average price obtained at Territorial points for greasy fleece during 1898 amounted to 10⅛ cents per lb., being a fraction below the 1897 price, but a fair average for the last four years. The average price of wool in 1894 was about 2¼ cents below the present season's value, while preceding years, as far back as 1886, show a larger price, with the exception of 1892 when the market was depressed to its lowest point.

It would be well if an attempt could be made, during the coming season, to identify the weed which causes the losses complained of in the Maple Creek and Calgary districts. It is interesting to note in this connection that in June of 1897 Professor John Macoun of the Geological Surveys Department conducted a series of investigations in the Foot Hills district of the west with a view to ascertaining the nature of the weed responsible for the deaths of a large number of cattle. He pronounced the plant in question to be *delphinium scopulorum* (Mountain Larkspur). The remedy he suggested was to keep the cattle out of the thickets and woods in the early part of June, when feed is scarce and cattle are liable to fill their stomachs with succulent plants in order to form cuds. As throwing further light on this subject, I may mention, that great losses have occurred in Montana flocks, which have been attributed to the eating of *delphinium Nenziesi*, producing symptoms of aconite poisoning. The following is a quotation from a report of the Montana Agricultural Experimental Station at Bozeman, in which a remedy in such cases is suggested:

The most effective remedy which was tried, however, was a hypodermic injection of atropine sulphate. A solution was prepared in camphor water in the proportion of four grains of atropine to one fluid ounce of camphor water. Several sheep were treated by this method, and all but one so treated recovered. Doses of three different sizes were administered: one-third, one-fourth and one-sixth of a grain of atropine sulphate. This was in solution with camphor water as just described, so that in order to give the atropine in the quantities mentioned, it was necessary to use forty, thirty and twenty minims respectively of the solution.

Atropine as a direct stimulant of the heart's action and respiration is perhaps the most powerful drug known to medical science. When used hypodermically its effects are much more immediate than when taken into the stomach, and consequently the doses should be smaller. One-third of a grain is a large dose for an animal of the size of a sheep. In fact one-twentieth of a grain is quite sufficient in the earlier stages of the poisoning. But the sheep to which these large doses were given were in the very agonies of death. Nothing could be given them by the mouth for the simple reason that the sheep could not swallow. They were lying on their sides and their whole bodies were in spasms. The respiratory movements were extremely rapid but so weak and shallow that the sheep were getting no pure air into the lungs.

The atropine solution was injected under the skin in the region of the shoulder. The effect of the atropine was shown almost immediately. The pulse at once became stronger, the animal drew a few deep breaths and then began to pant noisily. One minute after the atropine was administered the sheep was lifted upon his feet when he at once ran away panting loudly. The breathing soon became easier, the involuntary muscular movements ceased, and within five minutes time the sheep was lying down in a natural position and was almost as quiet as in health.

In our experience we found atropine to be the most prompt and satisfactory remedy, and we would therefore recommend the use of this drug whenever it can be had conveniently. Great precaution should be exercised in its use, since it is a powerful medicine. One should always know exactly how much he is administering. It is only in small doses that atropine has the desired stimulating effect. We would recommend giving one-sixth

to one-fourth grain in the later convulsive stages or in the mild cases one-twentieth to one-fifteenth of a grain. These doses are for sheep. For cattle we would use four or five times as much, about one grain of atropine, depending somewhat upon the size of the animal and the severity of the poisoning.

In the later convulsive stages ammonia fumes in the nostrils act promptly and powerfully. Breathing is stimulated and deepened.

If given soon after the sheep have eaten the larkspur, ammonia and alcohol are useful stimulants. They may be given together in water.

Ether in small doses (two or three drachms in water) has also a beneficial effect.

It is well to remember that alcohol, ammonia, ether and atropine stimulate the heart's action and respiration only when given in moderate doses. In large doses they all have the opposite effect, or act as paralyzers and depressants.

Care in the management of sheep after they are poisoned is quite as important as the giving of medicines. Sheep poisoned with larkspur should be kept as quiet as possible. A trifling fright or excitement may throw them into spasms, and thus result fatally. From the very first, the poisoned sheep have considerable difficulty in keeping up with the rest of the herd. They have a stiff and trembling gait. It becomes necessary for them frequently to stop for a moment to rest. In this way they repeatedly fall behind the herd and then run to overtake it again. Thus their excitement is constantly increased until they fall down in spasms.

It might be well if Territorial flock-masters would give this method a trial, as it is possible that the losses by poisoning on this side of the line arise from the same cause operating in the State of Montana.

There is one matter which I desire to refer to before leaving this subject, namely, the desirability of regulating the grazing of sheep upon the public domain. Serious conflicts have occurred in the State of Montana and elsewhere, and it is alleged that the sheep men are practically driving the cattle men out of business in that State.

The only district on this side of the line where trouble has, as yet, arisen, is on the Maple Creek range. Serious complaints have been lodged by the cattle men in that district with the Federal Government, but I am not at present aware of any steps having been taken with a view to adjusting the matter. There can be no doubt that the excessive stocking of the range with sheep is most detrimental to the live stock interests of the west. They eat closely and foul the pasture and in the semi-arid district where long periods intervene between rainfalls, this is most objectionable to any cattle and horses grazing in the same district. It would be in the interest of all parties concerned if steps were taken to confine the ranging of sheep to those portions of the Territories set apart for that purpose; but until the present unsatisfactory system—or rather lack of system—of administering the extensive grazing areas of this country is improved upon, and judicious regulations framed governing the running at large of all stock, it will be difficult to prevent overstocking or the confining of sheep to such portions of the country as are of no great value for cattle, although admirably adapted to sheep ranging.

SWINE.

The number of hogs fed throughout the easterly portion of the Territories during the past year was very disappointing. I have been unable to compile a reliable estimate bearing on this subject, but enquiry at the largest pork packing establishment at Winnipeg has elicited the fact that the total receipts during the year fell below one thousand head. The price paid at Winnipeg, weighed off cars, was 4¾ cents in the month of January. During the months of February, March, April, July, August, September, October, November and December the price was 5 cents, in May 5½ cents, and in June 5¼ cents. The above prices are for choice hogs ranging from 150 to 250 pounds. Packers at Winnipeg are willing to admit, that although a hog ranging from 150 to 250 pounds is the

most profitable from a packer's point of view, a sufficient premium is not being paid to induce farmers to market at that weight, and it is evident, that until the packers are prepared to discriminate very materially in favour of the hog described, the farmers are not likely to market their immature pigs.

The quantity of cured pork brought into the city of Winnipeg from eastern Canada and the United States is something astonishing, and it might appear to the uninitiated that such a state of affairs is altogether inconsistent with our exceptional facilities for the production of coarse feed and the high transportation rate on the same, both facts pointing unmistakably to the production of pork and the shipment of our grain in condensed form, as at least one step towards the solution of our difficulties. Very enticing statements have been made in the public press as to the enormous profits awaiting the farmers of the west when they have been "educated" up to selling their inferior grains in the shape of pork. These agricultural prophets, however, do not sufficiently appreciate the different degrees of skill required in feeding pork and eating pork. The feeding of hogs does not afford the returns one would expect under the peculiar conditions of the west. Prices have ranged low during the last six or seven years and the margin between the value of the grain and the value of the pork is a very small one; too small altogether, considering the labour involved in feeding. The economical and profitable feeding of hogs is a fine art and a necessary adjunct to intensive farming. It requires a thorough knowledge of the feeding value, from a chemical point of view of the various grains and by-products of the farm. The straight feeding of frozen wheat, under the present conditions, is, I should imagine, a practice of doubtful expediency, and the prices asked for milling by-products at westerly points in the Territories seem too high for practical purposes. There can be no doubt that the hog industry ought to be a prominent one in the Territories, but at the same time it must be admitted that the country has hardly reached that stage in its development where our farmers are able successfully to compete with Ontario and central United States pork, taking into consideration the cheap corn in these places and a community of feeders thoroughly impressed with the importance and utility of the "balanced ration."

The hog industry of the westerly portion of the Territories is on a somewhat different footing to the conditions ruling in the easterly portion. The latter is by nature of its position at present tributary to the Winnipeg packing institutions, while the market of the westerly district is almost a local one. There is practically an unlimited demand for cured pork in the mining communities located in the Kootenay country as well as a splendid market at the Pacific coast, and it behoves the farmers in northern Alberta to give closer attention to the requirements of these markets. It is gratifying to learn that the farmers in the north-westerly portion of the Territories are quite alive to the importance and profits incidental to pork raising under the proper conditions, but it is disappointing to find that with freight rates 800 miles in favour of Alberta producers, the prices of pork at Calgary during the past year should be materially below the Winnipeg quotations. The average price at Calgary during April, May and June was 5 cents and the balance of the year $4\frac{3}{4}$ cents. During the winter time the trade is altogether one of dressed meat, for which has been paid $6\frac{1}{2}$ cents per pound. It is probable that with a larger and more regular supply, a valuable trade could be worked up in the Kootenay district, which naturally would have the

effect of materially increasing the price of pork in that portion of the Territories.

POULTRY.

It almost requires an apology to introduce this subject. The hen is regarded by most farmers in the Territories as a sort of necessary evil. No particular attention is paid to her improvement and she is usually allowed to eke out a precarious existence on the straw stack or in the stables. Poultry statistics, however, is a most interesting study from many points of view, and I will venture to state that not one farmer in a thousand begins to realise the enormous economic value of the poultry produce of this country. Unfortunately Canadian statistics in this respect are very incomplete, but, generally speaking, Canada is admittedly head and shoulders above the United States as a poultry producing country. Canada is an exporting country, while the United States is an importing country. Although the United States statistics will not, therefore, convey the full significance of the poultry industry to Canada as a whole, and the North-West Territories in particular, it is hoped that a few figures on the subject may have the effect of making our farmers pause and consider the question. I do not think it is possible to describe the situation more graphically and concisely than has been done in the following editorial taken from the columns of The Rural New Yorker:

In 1895 the silver mines of America produced $72,510,000 worth of silver; during the same year the output of gold for this country was $46,610,000. So much for the precious metals so called. With regard to sheep: The total value of the sheep in this country in 1896 was $65,167,725, which included the proverbial "ram, lamb, sheep and mutton." In 1896 we produced, or rather the sheep did, 272,474,708 pounds of wool, with an average value of about 14 cents per pound. So much for the metals and sheep, and now for the poultry.

In 1890 there was in this country 258,871,125 "chickens" and 26,738,315 other fowls, such as turkeys, ducks and geese. The average value of the chickens was 30 cents each, and of the other fowls 75 cents each. The American hen laid in that year 810,722,916 dozens of eggs, with an average export value of 15 cents per dozen. If the increase in the past six years has been at all proportionate with the increase between 1880 and 1890, there were, in 1896, 350,000,000 chickens and 35,000,000 other fowls, and the hens laid 1,100,000,000 dozens of eggs. We estimate the value of these at $165,000,000 and of the poultry sold as meat, $125,000,009 more, or a total of $290,000,000. Here, then, is the statement:

Value of silver produced	$72,510,000
Value of gold produced	46,610,000
Of wool clip	38,146,459
Value of all sheep	65,167,725
Or a total of	$222,434,184
Earnings of poultry	290,000,000

Or if we were to put it another way, it might be said that the American poultry earned enough in one year to buy all the silver and gold that were dug out of the mines, all the sheep in the country and all the wool they made, and, in addition, the total crop for the year of buckwheat, rye, barley and potatoes. This year's earnings of the poultry would have bought all the milch cows in the country, which are valued at $263,955,545. The total value of all minerals mined in this country in 1894, including iron, gold and silver, was $218,168,788. The total coal product of that year was valued at $166,280,472, or about the same as the egg crop of last year. The total state and county taxes for the entire Union in 1890 were $143,186,007; so that the hens earned enough to pay the entire state and county taxes, with $150,000,000 left to pay for the tobacco crop, the potato crop, the rye crop, and a half a dozen other crops thrown in.

Run an eye over the following tables and see what Uncle Sam's poultry did in 1896:

Earnings of poultry	$290,000,000
Value of cotton crop	259,164,640
Value of wheat crop	237,938,998
Value of swine	186,529,745
Total school expenditures	178,215,556
Value of oat crop	163,655,068

Total pensions	139,280,978
Value of potato crop	78,984,901
Total of interest of mortgages	76,728,077
Value of tobacco crop	35,574,220

It will thus be seen that the American hen is giving an excellent account of herself. For, when we come to examine the above figures, we shall find that she takes no mean place among the producers of this country. Long live the American hen! May her cackle never grow less! May her comb grow red with prosperity! And may her eggs roll the mortgage from many a farm!

The poultry question is a pecular one. Rearing of fowls returns a large interest on capital invested, but the industry is not of a nature to admit of being dealt with profitably in a wholesale way. While the most profitable investment any farmer can make is the purchase of a good sized flock of well bred poultry, the moment he unduly extends his business, on the strength of past satisfactory experience, the same may tranform itself into a source of loss, instead of profit. To put the matter more clearly, the business of rearing commercial poultry will not bear a large outlay for labour. Other causes operate against the wholesale running of poultry, namely, the difficulty in giving individual attention to each bird of a large flock and the many mysterious diseases to which chickendom is liable and which present themselves with unfailing regularity wherever large flocks of poultry are kept in one place. While the statistics quoted, although probably a little exaggerated, throw a somewhat new light on the subject and emphasise the importance of the industry from an economical standpoint, the same is, as indicated, surrounded by peculiar conditions and is not an industry of a nature which would readily lend itself to being prosecuted as a venture separate and distinct from general farming. The ideal state of affairs will have been reached when every farmer keeps a flock of from fifty to one hundred wellbred hens on his farm. When that time comes it will not be found necessary to import, as we are doing at present, large quantities of poultry produce from Eastern Canada. With such an excellent market at our front door as the mining districts of the west, the poultry industry of the Territories ought, in time, to be one the greatest importance.

While the statement might hold good that the reason for the slow improvement of cattle and horses is owing to the lack of necessary capital on the part of the breeders to purchase wellbred male stock, this argument does not apply in extenuation of the present low standard of our farm poultry. Before this industry will ever reach the important position it ought to occupy, it will be necessary for our farmers and agricultural societies to devote some study to the matter. At present the most astounding ignorance prevails throughout the country. Interest in the subject is entirely lacking, and the flocks of the average farm bear the characteristics of negligence and mismanagement. Pure bred male birds of breeds suitable to the requirements of our climate can be obtained at a very low price ranging from two to three dollars apiece, and it is wonderful how short a period is required to breed from "barn door" stock into birds of uniform appearance and good table and laying qualities.

Large eggs such as laid by the various varieties of Plymouth Rocks and Wyandottes, etc., weighing at least seven to the pound, are now required in the market. The eggs should be strictly fresh and thoroughly cleaned before being marketed. While on this subject it might be well to state that the male birds should only be allowed to remain with the hens during the breeding season. When that is over they should be immediately penned up. It has been demonstrated over and over again that a hen will lay as many, if not more, eggs, under these conditions, and the fact

of the eggs not being fertilised will add one hundredfold to their keeping qualities. A fertile egg is not, strictly speaking, fresh after it has been under a hen for a few hours, whereas an unfertilised egg may be placed under a hen for three or four days and still be fit for consumption.

While there are certain objections to the raising of turkeys on a farm owing to their destructive proclivities where gardening is done, it is difficult to see why geese culture has been entirely neglected in this country. It is a well known fact that geese can be matured upon grass, and but a very small quantity of grain is required to finish them off for market. The meat is of excellent flavour and wellbred varieties such as the Embden and Toulouse, will, under ordinary conditions, readily reach a weight from 20 to 30 pounds. There is no branch of general farming which holds out greater profits than this upon capital required. The impression is altogether fallacious that geese cannot be reared without a pond or river. While they certainly present a cleaner appearance with water available, they can be forced to maturity at an earlier age without having access to water, except for drinking purposes.

The rearing of ducks is not as profitable in the Territories as the raising of either geese or chickens, owing to the expense of fattening foods. Duck culture can only be carried on at a profit where a first class market exists for early birds, which is only found in very large cities and towns where fancy prices are paid for such delicacies.

It is gratifying to note that the Dominion authorities are taking steps towards the encouragement of the poultry industry. Although the immediate object of the present Commissioner of Agriculture and Dairying at Ottawa is to introduce Canadian poultry in saleable condition on the British markets, and although this phase of the question is not one in which we are interested, owing to our market being in the opposite direction, there can be no doubt that the efforts of the Ottawa authorities will be of interest and value even to the west. Some excellent suggestions on the poultry industry generally are contained in the official report of the Commissioner of Agriculture and Dairying and I would strongly recommend every person interested in the question to procure a copy of the same, which no doubt can be had on application to the secretary of the department of agriculture at Ottawa.

GENERAL HEALTH OF LIVE STOCK.

Although this department has not within its jurisdiction the veterinary service of the North-West Territories, that being administered by the Federal Government through the North-West Mounted Police, a report upon the state and progress of the agricultural and live stock interests of the Territories during the year would be very incomplete indeed without a detailed statement as to the general health of live stock throughout the country. With this object in view, I have obtained through the courtesy of the Commissioner of the North-West Mounted Police and under the provisions of Section 7 of Ordinance No. 18 of 1897, under which the Department of Agriculture was organised, reports from a number of veterinary practitioners within the North-West Territories, which are herewith attached.

Report of T. V. Simpson, V.S., Yorkton.

I have the honour to report on the health of domestic animals as they

have come under my notice during my professional duties of the past year:

Tuberculosis.—Evidence of cattle being affected by this disease is becoming more plain and the large number of *post mortem* examinations which I have made in the past and found tuberculosis to exist shows to what an extent the disease may exist and no suspicion be aroused. It occurs principally in and among thoroughbred cattle and I would urgently recommend all buyers of thoroughbred stock for breeding purposes to have the animals tested by a properly qualified person before purchasing. It occurs to an alarming extent among milch cows of whatever breed, or among ordinary scrub animals. Last winter, while spaying a number of cows and heifers for a ranchman, an old cow, about twelve years of age, was sorted out with the bunch to be operated upon. On making the incision into the flank and gaining entrance to the abdominal cavity, large tubercules could be felt in every direction; but the operation was completed and the cow did nicely.

Later on the authorities ordered me to test the cow with tuberculin, which I accordingly did and got a reaction. She was immediately slaughtered and a *post mortem* examination made which showed miliary tubercules of the peritoneum (covering of the bowels) and large tubercules the size of an ordinary egg in the mesenteries (membranes attaching intestines); the number of both large and small tubercules to the ordinary observer would be incredible. The lungs were not so badly affected, for here I only found three or four large, soft tubercules. This cow, most of her life, has supplied milk to a family of children. The summer preceding her destruction she had yielded sufficient milk to provide about two hundred pounds of butter which was used for domestic purposes or sold as first class butter. This is but one of a large number of cases which has come under my own observation in this district and should be sufficient to show the insidious nature of this disease as well as the awful danger to which human beings are exposed when such become articles of consumption in the family.

Actinomycosis.—This disease, which is commonly called "lumpy jaw," is very common throughout the North-West. Altogether I have treated about thirty-two cases this last summer. The contagious character of this disease is fully exemplified on farms where one or two infected animals are allowed to run at large, and where the disease has been controlled very few animals appear to have become infected. Only last spring I had a case of actinomycosis in a three year old gelding.

Glanders.—Cases of this disease have not come under my notice so frequently as in the years of 1896-97 when I had altogether six cases. I have had but one case this year and that one, according to The Animals' Contagious Disease Act, was destroyed.

Symptomatic Anthrax.—Blackleg, as this disease is generally known, occurs every fall in the stock districts north-west of this point. In all, some fourteen head of cattle died from this disease last fall, and probably settlers from whom I have not heard lost cattle, as the disease is a prevalent one in that district and appears to be becoming more so every year.

Panaritium.—A disease, sometimes called foot-rot, is very contagious amongst cattle, causing great loss of flesh in animals that were formerly in good condition. Several herds were infected this year but the disease was not as wide-spread as in the year 1896.

Contagious Abortion.—A disease of mares and cows occurring almost every winter in different portions of the district which causes great losses

in herds where infection has taken place. Several infected farms came under my notice during the past winter and spring.

Mange.—I have had one or two cases of this disease in horses but none in cattle, nor have any cases occurred in sheep in this district.

Contagious Pneumonia of the Horse.—This is a most serious disease, running as an epizootic over the country from stable to stable and spreading by the infected animals themselves or by horse blankets, pails, halters and other articles upon which the discharge from infected animals may have fallen. The discharge is from the respiratory mucous membrane (nostril) and is of a highly contagious character to horses that have never had the disease, but animals once affected rarely take it again, at least for some years afterwards. A very severe epidemic of this disease spread, not only over this district, but over all western Canada last winter and spring. A few years ago contagious pneumonia of the horse was confounded with influenza.

Influenza.—Cases of this disease have not been very numerous during the past year, but the cases which have been brought before me have been serious in nature.

And now let me draw attention to a case occurring at Pott's Lake, east of this point and north of Saltcoats, last July: Six head of cattle—some of them thoroughbred—were found lying dead in the bush on the shore of the lake above mentioned and the position in which the animals were found would lead to the supposition that they had died in their sleep. I am sorry to say they had been buried when I visited the place, and the opportunity for making a *post mortem* examination was thus lost. But from the report of the position they were found in when discovered, with the head turned around to the side, and a number found dying at the same time, and no marks of violence being found on any of them, I came to the conclusion that they had probably died from the effects of eating some narcotic poison—probably a poisonous plant. Not being a botanical expert I failed to locate the supposed poisonous plant, although I held some correspondence on the subject with Dr. Fletcher. The settlers have informed me that, almost every summer, cattle are found dead around the lake, the waters of which are very strongly impregnated with alkalines. I would respectfully recommend that investigation be made so as to arrive at the cause of such losses among the cattle of this district and to prevent further loss to the settlers.

Report of J. J. Mountford, V.S., Prince Albert.

I have the honour to submit the following report on the health of all stock in the neighbourhood of Prince Albert during the past year:

There has been no disease whatever among sheep or swine in this neighborhood for several years and the condition is good.

An outbreak of anthrax among the cattle in this neighbourhood caused a loss of about seventy head. In every case the carcase was burned and all the other cattle were isolated and placed under treatment, many passing the treatment and being released.

Regarding horses: Eleven cases of glanders were brought to my notice and the entire number of animals affected were destroyed, the carcases burned and the stables disinfected. Exposed horses were isolated and tested.

Some influenza among horses has caused loss in numbers. I have not known of a single case of "Pink Eye" in the Territory.

All animals destroyed in this neighbourhood were destroyed at the request of owners.

Report of J. Pringle, V.S., Battleford.

I have the honour to report that all cattle, horses, sheep, etc., from reports and from actual observation, are shown to be in a healthy condition throughout this district.

During November there was an outbreak of glanders at Jackfish Lake which took off two animals. The bands of horses were at once isolated and since that time no further cases have been found.

There were a few cases of influenza reported to me. I ordered that the animals be at once isolated, and they all recovered.

A reported case of anthrax in a band of cattle sent in to be wintered by Messrs. Gordon & Ironsides, from Manitoba, was brought to my notice. I examined and quarantined them. On examination it was found that death was due to an injury received in transit.

One case of actinomycosis occurring, the animal so affected was promptly destroyed.

Report of W. McLeod Morrison, V.S., Valley View.

I herewith beg to submit the following report regarding the health of live stock in my district:

I am pleased to be able to state that I have not met with any cases of anthrax or tuberculosis.

I have only met with a few cases of actinomycosis, which yielded to treatment. Such cases should be reported to the nearest veterinary surgeon in the district.

I have also to report two cases of glanders. I think it would be well if the veterinary surgeons were supplied with mallein in order to enable them to make tests at once, and thus detect all cases. As district veterinarian, I have had a great deal to do with glanders in Manitoba, and have always found the quarantine system hard to enforce; but the mallein tests settles all disputes.

There are also a few cases of influenza.

Report of W. Weller, V.S., Kenlis.

Anthrax.—Two cases. First case, Tp. 19-10w2. Shot and cremated carcase, April 1898. Second case, Tp. 19-10w2. Shot and cremated carcase, May 1898.

Antinomycosis.—Three cases, all on same premises, Tp. 19-11w2. Shot all and buried, September 1898.

Tuberculosis.—None.

Glanders.—Four cases. First case, Tp. 20-10w2. Shot and buried twenty feet deep, May 1898. Second and third cases, Tp. 19-10w2. All three shot and burnt as soon as recognised, October 1898.

Influenza.—Numerous cases all through the year. All recovered. Principally in colts. The cases were mostly sporadic. No noted epidemic seen. Have no record of the number.

Mange.—None in cattle noted.

Sheep and Swine.—No sheep are kept in this district. Have noted no epidemic or contagious diseases in swine in this district.

Report of B. Fletcher, V.S., Moose Jaw.

I beg leave to report that the several classes of animals in this district

have been exceedingly healthy. I herein give a list and the number of animals affected:

Anthrax in cattle, none.

Mange in horses and cattle, none.

Tuberculosis in cattle, two.

Actinomycosis in cattle, six.

Glanders in horses, ten head affected in four outbreaks.

Influenza has been quite prevalent all over this district amongst horses during the past three months; the throat and lungs being the parts affected, accompanied by very high fever.

Sheep and swine have not been attacked by any particular disease in any part of the district during the present year (1898).

Report of A. W. Tracey, V.S., North Portal.

I have the honour to report *re* the health of stock in this district as follows:

Among horses I have had to deal quite extensively with glanders the past year. Twenty horses were destroyed after having been found to be affected with this disease. The outbreaks of glanders are confined principally to Oxbow, Alameda and vicinity, within a radius of about twenty miles.

Two outbreaks of influenza occurred in the vicinity of Souris mine, but were stamped out immediately.

Among cattle, one outbreak of anthrax north of Oxbow and six cases of actinomycosis; the latter among cattle belonging to farmers in the vicinity of Oxbow and Carnduff.

Sheep and swine no disease.

With the above exceptions the health and appearance of the stock in this district have been excellent.

Report of R. G. Matthew, V.S., Regina.

I have the honour to report re health of horses, cattle, etc., during the past year:

Horses.—In general the health of horses has been good. One rather bad outbreak of glanders occurred north-west of Fort Qu'Appelle; the Kearns Brothers' ranche being the one most affected. A few other scattered cases have been destroyed during the year.

A large per cent. of the horses of this district had suffered from influenza during the summer but the mortality was very small; in most cases little more than a severe cold. No cases have come under my notice where it has taken the form of pinkeye.

Cattle.—The health of cattle in general has been good. Five head have been destroyed for tuberculosis, fifty-four for actinomycosis, and twelve for anthrax, which is very few considering the number of cattle inspected. A large per cent. of the cases of actinomycosis occurred in the Yorkton and Saltcoats districts, due partly to the movement in stock in those districts.

One small outbreak of anthrax occurred on the File Hills Reserve in the early part of the year, but did not spread, owing to the Indian agent, Mr. Graham's prompt disposal of the carcases of the dead animals and disinfection of the surroundings. Later in the autumn three head died a few miles north of there, but it was stopped with very little trouble.

Sheep and swine.—We have had no reports of contagious disease in either sheep or swine during the year, very few having been raised in this district.

Report of C. H. H. Sweetapple, V.S., Fort Saskatchewan.

I herewith beg to submit the following report regarding the health of live stock in my district:

Two cases of glanders have come under my notice during the past year, but I can safely state that the district is now free from this disease.

No outbreak of disease has occurred any more than that individual settlers have sometimes lost several animals. The diseases can usually be traced to unsanitary surroundings.

Actinomycosis is rapidly decreasing.

Anthrax has not yet appeared.

Symptomatic anthrax has been most prevalent, and has caused serious losses to the settlers in some localities.

Very few sheep are kept in this district, and no disease has been reported among them, although I was informed that a number of lambs died shortly after birth and that the thyroid glands are always enlarged (goitre.) This disease also frequently appears in puppies.

The general health of all classes of stock has been good, although horses have frequently died of a disease called by the old settlers "yellow water," and is frequently described as anæmia and general debility. I have not had an opportunity to investigate and satisfy myself as to its nature. I attach herewith a statement of animals destroyed under The Animals Disease Act:—

Horse, 2 (Glanders).

Cattle, 5 (Actinomycosis).

Report of J. D. Lauder, V.S., Innisfail.

I herewith submit a report upon the health of live stock in my district:

Speaking generally, the past season has been a singularly good one. There has been but little pulmonary sickness, and most of the cases in my charge have recovered. I have heard of very few deaths, either directly or indirectly.

There have been very few cases reported of diseases of the digestive organs, and those have not been of a very serious nature.

The Rocky Mountain monkshood grows in some parts of this district, and I have been called in to attend several cases of what I believe to be poisoning caused by eating the weed in question from the spring. The symptoms were all those of aconite poisoning.

Both cows and mares have done remarkably well this season, and deaths have been remarkably few; those that did occur being chiefly during parturition.

Casualties from accidents have not been more numerous than usual.

There have been numerous cases of black leg. The outbreak occurred in the district east of Innisfail, principally in Townships 35, 36, 37 and 38 in Ranges 24, 25 and 26 west of the Fourth Meridian, and nearly all cases proved fatal. This occurred in the fall of the year, and was confined to young stock. Vaccination seems to be the only remedy for this disease, but owing to the difficulty in getting lymph, I have not been able

to properly test its efficiency. Might I suggest that your department take the matter in hand as worthy of consideration?

Actinomycosis is common in this district, and, if anything, is worse than in previous years. I think a stringent law ordering the destruction of all animals so affected would be a great benefit.

I have heard of no cases of tuberculosis or of mange, and I think the district is free from these diseases.

As to glanders among horses, I am of opinion that glanders proper does not exist in this district. There have been numerous cases of chronic catarrh and nasal gleet, and in some cases, animals suffering from these have been destroyed. I have never seen a case of glanders in this district, and I believe it does not exist.

A number of cases of influenza have come to my knowledge. These cases occurred in the early spring and fall. In almost all cases proper treatment and care have effected a recovery.

No particular diseases have occurred among sheep or swine. Coyotes are troublesome, and have destroyed a number of the former.

Report of G. V. Stevenson, V.S., Calgary.

I have the honour to make the following report re animals affected with contagious diseases from January 1, 1898, to December 31, 1898. During the present year there have been animals quarantined and destroyed affected with the following diseases.

Actinomycosis, 30 cattle quarantined, 34 destroyed.
Anthrax, 2 cattle died.
Tuberculosis, 8 cattle tested.
Blackleg, 4 cattle died.
Glanders, 1 head destroyed.
Mange, 1 horse destroyed, 43 horses quarantined, 12 mules quarantined.
Influenza, nil.
Pinkeye, nil.
Sheepscab, 1494 sheep quarantined.
Total number of animals destroyed, 36.
Total number of animals quarantined, 1579.
Stock in this district is looking very well.

Report of G. Fraser, V.S., Lethbridge.

I have the honour to make the following report regarding the general health of the live stock in this district

The general health of all animals has been good, only four horses with glanders having been reported. Of these three were destroyed and the fourth died while in quarantine. The carcases of these animals were buried according to law.

Five cases of anthrax have come to my knowledge. These animals were also buried by the owners under my supervision.

No disease of any description has been reported among the sheep and swine of this district.

Report of T. A. Wroughton, V.S., Macleod.

I beg to state that the health of the live stock throughout this district has been very good indeed, there being very little disease of any kind.

No cases of anthrax or tuberculosis have been brought to my knowledge, with the exception of one animal, which was imported, along with some others, into the country. As these animals were not previously tested by the tuberculin test, as laid down by The Animals Contagious Disease Act, they were subjected to the same at the boundary, with the result that one of the animals reacted, was declared to be suffering from tuberculosis, and was not permitted to enter.

Several cases of actinomycosis have existed from time to time. These have been disposed of according to the Act.

Some cases of symptomatic anthrax, better known as "black leg," have occurred, but not to any great extent.

In the spring some animals were found to be suffering from a skin disease, which at first was thought to be mange. Upon examination, however, no trace could be found of the "mange mite" (mange parasite), the cause of true scabies. The disease was owing to the condition of the blood, causing a form of eczema, (eczema simplex), a non-contagious disease, which disappeared after the new grass appeared.

Influenza has not been so prevalent this year as it was last year, in fact it has almost been unknown in this section of the country.

One outbreak of glanders occurred at Lethbridge during the months of May and June. Three animals were destroyed, and one died. Six were subjected to the "mallein test."

No diseases have occurred among sheep and swine.

BOVINE TUBERCULOSIS.

It is, of course, impossible to obtain reliable statistics as to the general extent of this destructive disease, as few countries would care to publish figures revealing the actual state of affairs. Great Britain has been credited with 20 per cent. of tuberculous cattle and London, England, with 25 per cent. of the total number. In one lot of 1,058 animals tested in Germany by Dr. Kopp, 783 reacted, or over 75 per cent. of the total. That the disease is quite common in eastern Canada may be gathered from the fact that of 54 head tested at the Central Experimental Farm at Ottawa, an institution where cattle are continually under the supervision of skilled attendants, no less than 26 reacted and were ordered to be destroyed. Equally unfortunate was the result of testing the herd of the Ontario Agricultural College at Guelph. Recent tests of dairy stock supplying milk to the city of Winnipeg showed an alarming number of cases of tuberculosis. Comment is unnecessary.

After the tuberculin test had somewhat opened the eyes of nations to the staggering prevalency of this disease among cattle and the consequent danger to mankind from infection, particularly through the milk supply of cities, drastic measures were adopted. Large sums of money were voted by parliaments, valuable herds all over the world were indiscriminately slaughtered and the meat destroyed, and "the tuberculin craze" rapidly approached the point where "the cure was worse than the disease." In the state of Massachusetts alone over $750.000.00 was spent upon the payment of government compensation for animals ordered to be slaughtered after reaction. Common sense, however, prevailed in the end and the principle of compulsory slaughter has now practically been universally abandoned in favour of rational systems of isolation, coupled with improvements in the sanitary condition of cattle stables. Great credit is due Dr. Bang of Copenhagen, Denmark, whose investigations in this con-

nection were chiefly instrumental in causing other nations to pause and consider the futility of combatting the disease through the agency of destroying affected individuals, and in bringing about improvements in the mode of housing and caring for stock unfavourable to the development of tuberculosis.

The usual manner of dealing with the disease now is to isolate all reacting animals, fatten them up quickly and turn them off, thoroughly disinfect infected premises and add only tested animals to the herd. Calves from tuberculous mothers are removed from their dams immediately after birth and hand raised on milk from healthy cows. The opinion has been expressed by an eminent authority that tuberculosis will soon be stamped out, and judging from the strenuous efforts put forth in all countries where the disease has gained a foothold, it is within the realms of possibility that such will ultimately be the result; not, however, until the same wise precautions now enforced in respect of cattle are applied with such modifications as the exigencies of the case may demand, to the human race also.

The Department of Agriculture at Ottawa, realising the danger of the situation, took steps to have tuberculin tests performed upon Canadian herds, free of charge, by qualified government veterinarians, in all cases where stock owners voluntarily applied for such. Under the government arrangement the applicant is not required to slaughter any reacting animals, but must agree to quarantine them, which as a matter of fact, amounts to practically the same thing, owing to the expense of isolation. In cases where the disease is only local, such animals are generally prepared for the market and the sound portions of the carcases are disposed of. The premises upon which reacting animals are found are thoroughly disinfected. Legislation has also been passed compelling importers of stock from foreign countries to have the same tested before embarkation or while in Canadian quarantine. No reacting animal can be entered.

While no breeder is, as yet, compelled by law to subject his herd of the tuberculin test, it is evident that it would be in the public interest that every stock owner should voluntarily have his animals tested. The test is now conducted free of charge by the government, the nature to the disease renders a clinical diagnosis of an incipient attack impossible, and the innoculation is not attended with the slightest danger to the animal; in fact it has been argued by reliable authorities that there is evidence on record where the progress of the disease was apparently arrested through the injection of tuberculin. It is, therefore, evident that any breeder of pure bred stock, who refuses to submit his herd to the test, deliberately fails in his first duty to himself, his customers and his neighbours. The natural inference would be that such a man has no confidence in the condition of his stock and fears the revelation involved, which might compel him to put his tuberculous bulls to the block instead of disposing of them at large prices to his unsuspecting customers in the far west, whose herds furnish "fresh fields and pastures new" for the disease germs. Unfortunately, unscrupulous breeders are too plentiful—men absolutely devoid of public spirit and business integrity—and until purchasers of pure bred stock are educated up to the necessity of protecting their herds against the ravages of the most terrible disease of modern times to man and beast—a disease which was responsible for one-fifth of the total number of recorded deaths in Canada during the year 1897—there is but little hope of checking its westward march.

The fact cannot be denied that the North-West Territories possesses a climate probably as unfavourable to the development of tuberculosis as can

be found anywhere in the world. Our rarified air, great preponderance of sunshine, and the length of time cattle are ranged or herded, are all important factors in our favour. That the disease is foreign to these exceptional conditions, however, must be met with a most positive denial. The following quotation from a bulletin on the subject, issued by the Utah agricultural college, is of interest in this connection:

Consumption is more or less present in all climates and all latitudes, although doubtless there are some situations and some climatic conditions at and under which the disease flourishes more than in other climates. The dry atmosphere of some of the southern States, of New Mexico and Arizona, have been supposed to be inimical to consumption. The Tennesee mountains and the slopes of the Rockies have also been looked upon as sanitaria for consumptive sufferers. Yet, in those localities when once it has been introduced, it has spread; and even on the mesas of Mexico—6,000 or 7,000 feet above the sea level—it is somewhat prevalent. The sheltered mountain valleys of Utah are comparatively free from this fell disease, but we have proof that even here, when once it has gained a footing, it can grow and spread, becoming an important factor in the shortening of lives of both men and animals, thus producing great financial loss to the community. It should be, therefore, incumbent on every inhabitant of Utah to aid in suppressing in its beginning a disease, which, if neglected, may cause us at some future time to lament our supineness.

The unventilated and generally insanitary conditions of most cow stables in the northerly and easterly portions of the Territories, and the length of time it is necessary to keep cattle (or at least cows) confined owing to the severe winter, offset, to some extent, our climatic advantages. In the ranching districts of the south-westerly portions of the country, the occasional reduced condition of cattle and low state of their general health after a hard winter's ranging, furnish excellent breeding soil for the tubercle bacillus. With the present rapid development of the North-West Territories, the dairy industry promises to become a leading one at no distant date, and in its train follow the artificial conditions incidental to the successful production of the greatest quantity of butter fat—lengthened period of confinement, warm winter quarters, which under our present primitive conditions often precludes the possibility of thorough ventilation, high feeding at the expense of the disease-resisting powers of the animal—all are facts we cannot afford to disregard. Much has been said and written on "prevention being better than cure." In this case the wisdom of the adage cannot be questioned. For advanced tuberculosis, science has, as yet, failed to provide a cure; but it is well to remember that the disease is one peculiarly amenable to preventive measures.

The remedy of Territorial breeders is obvious. Let them insist on a clean bill of health and buy no bull from eastern breeders without a government certificate to the effect that the animal has been subjected to the tuberculin test, without reaction. As before stated, if the eastern breeder has confidence in his stock, he can give no valid reason for refusing to comply with such a request, and if he does refuse—avoid him and purchase elsewhere. His well shaped, well bred bull will probably in the end prove a curse to the purchaser, his neighbour and his district, and would be dear as a gift. The danger of using a tuberculous bull is tenfold greater than that incidental to the introduction of tuberculous female stock. Although the theory of heredity, or even to some extent hereditary predisposition to the disease is not quite supported by the results of recent investigations, there can be no doubt that congenital tuberculosis may be possible in the offspring of either a tuberculous sire or dam. However, it is obvious that breeding between a tuberculous bull and a healthy dam is fraught with danger of contagion to the latter, and under the system of herding the bulls together during a portion of the year in the ranching districts of the Territories, the serious danger is also pre-

sent of one diseased individual infecting the whole bull herd, which, in turn, may communicate the bacillus to the female stock during the breeding season. It behoves every importer of bulls from infected districts to be on his guard and let the watchword be "a clean bill of health" in all such importations.

As indicated before, heroic measures in such matters rarely meet with success. The process of ridding a district of, or guarding it against the introduction of tuberculosis or any other menace to a community, should be educational rather than violent. Once the department has gained the support of public opinion in any such undertaking, judicious regulations on the subject are easily enforced without engendering a spirit of antagonism among the very people whom it is sought to protect. Resolutions have been passed by representative and interested bodies asking the department to prohibit absolutely the importation of thoroughbred stock into the Territories, without a certificate of non-reaction under the tuberculin test. The time, however, is not ripe for such a radical measure, even if it were within the power of the department, and hedging the importation of thoroughbred stock around with such stringent conditions would have the effect of checking the same materially—a result which would be fraught with most deplorable consequences.

BRAND REORGANISATION.

There were approximately 4,000 brands on the records of the late recorder of brands at Macleod when they were transferred to Regina. During the year 3,068 of these brands were reallotted, 2,111 applications were received for cattle brands under the provisions of the new Ordinance, and 941 applications for new horse brands.

Owing to the fact that a large number of stock men failed to file their applications for the reallotment of old brands until within a few days of the first of July, when the time within which such applications could be received expired, it delayed the work considerably and it was found impossible to deal with the new horse brand applications until all these allotments were disposed of and the indices written up to date; owing to the uncertainty as to whether any particular brand would conflict with any previously recorded brands or not.

The volume of correspondence which was received in this department in connection with the brand work was wholly unprecedented in the history of Territorial administration. During the ten weeks from June 1st to 14th September some 4,000 letters were received, and every one required special consideration. The communications sent out from the department within the same period amounted to 6,500.

It was the exception and not the rule to find that the application for the reallotment of a brand was in such a state that the records could be searched and the certificate issued without any further trouble. In the vast majority of cases, stockmen were branding with brands to which they had no right whatever, and it devolved upon the department to suggest the necessary steps to acquire ownership of the said brands, draw out forms of statutory declaration for them, in cases where it was evident that they had a moral right to a particular brand, although they were not in a position to show a particle of evidence to the effect that they had a claim to the brands on a legal standing. In many cases parties were branding in the wrong position; on the right shoulder when they should have branded on the left, and *vice versa*. In other cases they were branding with a different brand to the one recorded in their name,

or had made some alteration in the brand without having made application to the late recorder to have the change recorded, and very often, neither the position, brand nor title agreed with the records here.

In at least 75 per cent, of the total number of cases of reallotments dealt with, voluminous correspondence was required and a large number of cases have not, as yet, been finally wound up. Great difficulty was experienced in dealing equitably and promptly with each case. If a single deviation was made from hard and fast lines in order to close up some particularly vexatious case, it was sure to be quoted as a precedent by dozens of other applicants within a very short time. Those people who were loudest in their complaints were generally those whose cases were the most complicated and in the most irregular and entangled condition, and who, it might have been expected, would have assisted the department in every possible way to get the title to their brands placed on some sort of a businesslike basis, instead of throwing obstacles in the way of attaining this object.

It is a regrettable fact that great delay sometimes occurred in dealing with communications, but such was absolutely unavoidable. The peculiar nature of the work was such that only a limited staff could be employed at it, and whenever it was possible profitably to utilise more assistance, it was invariably procured. The regular hours of the department were, during the whole summer, owing to the extraordinary rush of work, from 9:30 a.m., to 9:30 p.m. with only just sufficient time allowed to take dinner in the evening.

Judging by the large number of applications still coming in, it is apparent that the number of brands on the books of the department will be very materially augmented during the coming year. There is also a tendency on the part of stock owners to use nothing but recorded brands, and to permit no unbranded stock to run at large. I have, under the heading of "Estray Animals" commented on the advantages which would result to owners of stock if they would exercise care to have their whole herds branded with their recorded brands, in the way of minimising the danger of losing such stock by straying or theft.

STOCK AND HIDE INSPECTION.

Considerable difficulty was experienced during the past year in carrying out the provisions of that portion of The Brand Ordinance dealing with the inspection of stock and hides. The department has been but recently organised during the early part of the shipping season, and in view of the enormous volume of work, it was found absolutely impossible to give due attention to matters of this kind. However, enough was learned in administering the Ordinance to plainly indicate the advisibility of sweeping changes in it. A request was made by The Western Stock Growers' Association to have an inspector placed at Winnipeg to inspect all east-bound stock. This was done, but as anticipated, the result was not at all useful or satisfactory, except in so far as his work was a check upon the local inspection carried on simultaneously. The recommendation of the stock association was to have the work conducted somewhat similarly to the system adopted in the State of Montana where stock inspectors are maintained at all the principal market points. One must not, however, lose sight of the great difference between the conditions of Montana and those prevailing throughout the Territories. The object of a system of stock inspection as practiced in Montana is twofold. First and foremost, to clear the range of strays, and secondly, to insure

that the proceeds of the sale of stray stock is remitted to the proper owner. The clearing of the range of strays is an object which our present Ordinance is not intended to provide for. This phase of the cattle industry must of necessity be dealt with by the stockmen through their associations There is not, however, the same reason for such action in our stock districts as there is in Montana, which is a larger range country than our own and where stock often stray for hundreds of miles, a state of affairs not at all resembling the conditions in this country, where stock are pretty well kept upon their own range. Admitting then, that no legislation need be provided for the clearing of the range, only one object remains, namely, the prevention of stock stealing. In order to effectually protect the rancher against this evil, it is apparent that the system of inspection, which would prevent stolen stock from leaving the Territories, is a local one. Inspection at Winnipeg would not accomplish this object; in the first place, owing to the fact that an inspector, to have any authority or power vested in him, must be recognised by the Manitoba Government through reciprocal legislation, which is a step that Province might very properly refuse to undertake; and secondly, an inspector at Winnipeg has no opportunity whatever of ascertaining, until the cattle are half way across the ocean, whether the said stock were properly or improperly shipped. The stock inspector at Winnipeg, Mr. Chas. Knox, whose report I beg to attach, performed his duties in a most painstaking and careful manner, and took the trouble to report a number of suspicious shipments, but he would naturally only report the cases where stock were shipped far from their home range, and even then he had no assurance whatever that the animals were not shipped by their rightful owner or with his sanction.

Considerable dissatisfaction arose with respect to the provisions of The Brand Ordinance governing the inspection of hides. The ordinance provides for the inspection and punching by a stock inspector of the hides of all animals slaughtered, but this provision cannot be complied with in practice. If a hide is fresh there is, of course, no difficulty in the way of inspecting it, but in the vast majority of cases it is rolled up and either dried or frozen. It is therefore quite evident that the law on this subject should be amended at the earliest possible date. The moral effect of legislative provisions, impossible to enforce, such as this, is decidedly unfortunate and has a distinct tendency to bring the whole enactment into contempt. Too many people argue that if one provision of an Ordinance can be ignored, why not another.

REPORT OF CHAS. KNOX, TERRITORIAL STOCK INSPECTOR.

Acting under instructions received from your department, I herewith proceed to make a general report of my inspection up to date:

I commenced work on the 19th September, 1898, and have attended the stock yards from daylight to dark every day (with exception of Sunday) since, and have examined 14,531 head of cattle from all parts of the North-West Territories. I have found among these some thirty or forty strays, which have been reported either to the owners or to the department. I have carried on a vast correspondence, answering enquiries, etc., and in fact done the work of two men. However, as I took the position, I was determined to do the work properly, and this I have done to the best of my ability, but can never undertake the work again on anything like the same terms. As to the inspection here being absolutely necessary, I do not think there is any doubt on the subject; at the same time,

to make it thoroughly efficient, a great many changes are necessary. I would suggest the absolute necessity of the inspector being supplied with a good horse. I have myself run a great risk during the time I have held the position, from being shorthanded and without a horse, which I would not care to do again. The inspector also requires more authority. As an instance, cattle which are unloaded during the night should not be mixed with cattle already in the yards, until inspected.

As an instance of the unsuitability of your local inspectors, I may mention the following which was told me by a prominent shipper a short time age: He purchased some cattle from a rancher. Among his herd he noticed several large steers, which he naturally wished to purchase, but was told by the rancher that they were American steers, but if he liked they could run them in, ship them and divide the proceeds, whereupon the shipper suggested the possibility of the inspector "getting on to it," at which the rancher laughed and said he did not think there was the slightest fear. Then the shipper enquired what was to be done with the inspector at Winnipeg. The rancher answered that he did not know him, but that if it came to the worst they could give him one-third of the proceeds. It is needless to say that the shipper refused, and also that I am not at liberty to mention names. Again, a shipment of cattle was made from Pincher Creek in which I found a steer that had not been paid for. On enquiring whether these cattle had been inspected, the shipper told me the local inspector at that time was not available.

As to the shipping of cattle affected with lumpy jaw, I am not thoroughly acquainted with the law on the subject, but wish to draw your attention to the fact that upwards of one hundred head of cattle affected with this disease have been shipped from the Territories during my term of inspection. A large number of these cattle were totally unfit for human food, into which use I have no doubt they have been turned.

As to the shipping of horses to points other than Winnipeg, the question is a hard one, although there is no doubt inspection of them is urgently required. I think if the inspector were notified by wire to be at the point of unloading at a certain day when the horses were expected to arrive, he could manage to handle them too, as the majority are shipped early in the spring, and although this would entail extra expense, it would prove of great advantage to the stockmen, as there is no doubt large numbers of horses are stolen and shipped to the Province of Manitoba every year.

In conclusion, I trust that my services have been of material benefit to the stockmen. Any other information which lies in my power to give, I will only be too happy to forward the department at any time.

LIST OF STOCK INSPECTORS WITH STATEMENT OF STOCK AND HIDES INSPECTED DURING THE YEAR 1898.

NAME OF INSPECTOR.	ADDRESS.	NO. OF STOCK INSPECTED.	NO. OF HIDES INSPECTED.
John Art	Saskatoon	643	Nil
William Plaxton	Prince Albert	1258	673
J. H. G. Bray	Medicine Hat	3731	Nil
William Milburn	Rush Lake	323	Nil
W. A. Douglas	Maple Creek	3180	101
D. Fletcher	Moose Jaw	40	Nil
Chas. E. Good	Dundurn	490	Nil
A. E. Westbrook	Balgonie	Nil	12
B. D. Westman	Churchbridge	168	Nil
Chas. M. Lange	Langenburg	77	Nil
Alex. McKenzie	Qu'Appelle Station	483	Nil
Jos. Brannan	Broadview	19	Nil
W. B. Smithett	Saltcoats	490	Nil
W. H. Stoddart	Whitewood	507	9
J. H. Johnston	Claresholm	957	Nil
Frank Ricks	Cochrane	293	18
W. E. Smith	Crow's Nest Road	37	97
J. Hollies	Peigan Agency	140	Nil
Richard Broderick	High River	1063	55
John Paterson	Okotoks	333	Nil
A. W. Fish	Seventh Siding	450	Nil
R. G. Mathews	Macleod	1627	Nil
R. A. Janes	Calgary	2785	Nil
Howell Harris	Lethbridge	2936	358
H. W. Millar	Cayley and High River	1381	Nil
Wm. Graham	Morley	121	Nil
G. H. Wheatley	Gleichen	Nil	113
J. N. Burdick	Lacombe	56	21
H. A. Hetherington	Innisfail	13	Nil
F. P. W. Soper	Olds	420	9
W. Postill	Red Deer	Nil	19
F. D. Freeman	Blood Reserve	Nil	901
R. Urch	Lethbridge	Nil	Nil
J. Finnegan	Gleichen	Nil	Nil
W. B. Elliott	Cochrane	Nil	Nil
F. Osborne	Calgary	Nil	Nil
J. W. Smith	Peigan Reserve	Nil	Nil
W. H. Napier	Morley	Nil	Nil
Chas. Sharples	New Oxley	Nil	Nil
Duncan McIntosh	Cayley	Nil	Nil
C. Brown	Davisburg	Nil	Nil
A. E. Bates	Cardston	Nil	Nil
H. Tennant	Coutts	Nil	Nil
J. V. Simpson	Yorkton	Nil	Nil
A. S. Balfour	Lumsden	Nil	Nil
J. J. Clark	Crowfoot	Nil	Nil
W. J. Campbell	Duck Lake	Nil	Nil
Wilfred Latour	Battleford, Sask.	Nil	Nil
J. E. Miquelon	Wetaskiwin	Nil	Nil
Joseph Newman	Cannington Manor	Nil	Nil
Robert Stewart	Moosomin	Nil	Nil
Joseph Leonard	St. Albert	Nil	Nil
W. A. Griesbach	Fort Saskatchewan	Nil	Nil
Daniel McLean	Indian Head	Nil	Nil
E. J. Bangs	Morley	Nil	Nil
		24,021	2386

AGRICULTURAL SOCIETIES.

The aims and objects of the department of agriculture and those of agricultural societies may be said to be identical. While the former has in view the utilisation and development of the agricultural resources of the whole of the North-West Territories, the latter should undertake the solution of the same problem as far as it concerns the district served by each society, and thus in time develop into the most important agency of the department in extending encouragement and assistance to any particular branches of the agricultural and pastoral industries. An examination of the Ordinance under which these societies are organised will discover the fact that their objects are manifold. The funds of such societies may be expended upon the introduction of new varieties of seeds and plants, upon the holding of agricultural and industrial exhibitions, in payment of prizes for essays on scientific or agricultural subjects. upon the prosecution of farmers' institute work and upon the eradication of noxious weeds. It is a matter of regret that a large majority of the forty-four societies organised in the Territories would appear to have wholly misunderstood the objects for which they were formed. The prevailing opinion seems to be that the sole aim of the existence of such institutions is the holding of inferior shows, while their main channels of usefulness are wholly lost sight of.

In nearly all the provinces of the Dominion two distinct organisations exist under which similar work is carried out, namely, the agricultural societies proper, which devote their funds principally to the holding of exhibitions and to some extent to carry out a number of other objects included in our own Agricultural Societies Ordinance, and the farmers' institutes, having in view the holding of farmers' meetings for the discussion of subjects in connection with agriculture. There has lately been an agitation throughout the country for the establishment of farmers' institutes in the Territories. Such a step would, however, be a fatal mistake. There can be no doubt that the scattered settlement of the North-West Territories would operate against the success of any extensive system of farmers' institutes. The same work can be accomplished by our agricultural societies; in fact, the Ordinance as it now stands, expressly assigns the work to those institutions. The establishment of additional organisations at various points to carry on farmers' institute work, would, in my opinion, only weaken our present societies. An attempt should rather be made to widen the scope of existing agricultural societies by judicious departmental direction and co-operation, and thus materially strengthen them. The societies at present organised are fairly evenly distributed and should be able successfully to handle the institute work, which, as a matter of fact, is now being vigourously carried on in portions of eastern Assiniboia. Before leaving the subject of farmers' institute work it might be well to quote the following paragraph on the subject from the pen of the editor of Farming, of Toronto:

> Destined to gradually raise the condition of agriculture in Ontario, this organisation of the "Farmers' Institute" will not rest satisfied with making agriculture (that which it is already) the most important industry of the country, but it will make it, more than any other industry, fitted to ensure the prosperity, the happiness of its adepts. By provoking the spirit of research, of emulation and of imitation, by instilling a taste for personally conducted experiments, by putting experienced and successful farmers into communication with the inexperienced and unsuccessful farmer, these conventions never occur without doing some good, even when they are held at uncertain intervals and are carried on with perfect freedom from control. But how much more influential will they be when, directed by firm management and method, they shall have become a quickening organ of the agricultural system of the country.

The impression seems to prevail that the day of the inferior small show is over. Much can be said regarding the educational value of agricultural shows, but if they are not of such a nature as to invite outside competition, they most decidedly fail in their mission. The only justification for the holding of any exhibition is the facilities offered for comparing the products of the district with those of other localities, and unless the prize list is generous enough, this result is not attained. There can be no doubt that there is ample room for four or five creditable shows along the main line of the Canadian Pacific Railway, and two or three on the branches. If agricultural societies would amalgamate for the purpose of holding annual shows at central points, and so arrange their dates as to form a circuit with the Manitoba summer shows, there is good reason to believe that exhibitors from eastern Canada at the Manitoba fairs would consider it to their interest to bring their stock into the Territories, even if they barely cleared expenses. A ready and profitable market is being opened up in the Territories for pure bred live stock of all breeds, and eastern breeders realise that the agricultural show is their best advertising medium. Sectional prejudice will, of course, have to be overcome before such arrangements could be successfully accomplished. The practice now, where attempts have been made at amalgamation, is to hold a perambulating show. Such an undertaking, however, can only grow to a certain point. In order to ensure the maximum of attendance and interest in any show, it is necessary that it should have permanent headquarters. The expense of putting up suitable buildings and sheds, as well as the care and maintenance of tracks and grounds, is a very large one, and it stands to reason that the greatest success will only be possible where all efforts are concentrated at one point which could rely on receiving the revenue incidental to a good show every year.

The existing law of the Territories regarding agricultural societies has, in the past, probably to some extent, operated adversely to the holding of central shows. No premium has been placed on larger shows or facilities furnished for amalgamation of societies; but on the contrary, a low maximum of membership, upon which the Government grant is based, has been fixed, beyond which no assistance is given. A bill has been prepared, under your direction, for submission to the Legislature during the coming session which is intended to repeal the present Agricultural Societies Ordinance, and, it is hoped, would correct many of the weak points in the present law.

The following is a schedule showing the number of societies at present in existence, with the names of the secretaries, number of members, amounts of grant drawn and dates of annual exhibitions, if any :

NAME OF SOCIETY.	SECRETARY.	NO. OF MEMBERS.	AMOUNT OF GRANT, 1898.	DATE OF EXHIBITION.
Wolseley	L. Thomson	100	100 00	September 27
Yorkton	J. H. Nelson	100	100 00	None
East Moose Mountain	D. Pierce	87	87 00	"
Broadview	W. C. Thorburn	83	83 00	"
Moose Mountain	Hugh Kippan	104	104 00	October 4
Fairmede	J. Kidd	138	138 00	None
Lacombe	F. Vickerson	106	106 00	October 6 and 7
Innisfail	H. A. Malcolm	169	150 00	None
Red Deer	G. W. Greene	111	111 00	October 11
South Qu'Appelle	J. Doolittle	189	150 00	October 20 Joint exhibition
Indian Head	A. W. Sherwood	202	150 00	
Qu'Appelle	R. Williams	85	85 00	
St. Albert	(No returns.)	...	...	...
Whitewood	F. A. Morrison	100	100 00	None
Fort Saskatchewan	G. T. Montgomery	76	76 00	"
Pheasant Forks	Jas. Franks	113	113 00	October 13
Grenfell	H. Coy	86	86 00	September 28
Little Cut Arm and Qu'Appelle	W. Cosgrove	87	87 00	None
N. E. Assiniboia	Jas. Nixon	50	50 00	September 30
Stirling	Thos. McNutt	99	99 00	October 11
South-East Assiniboia	J. Young	117	117 00	October 7
Alameda	J. P. Maitland	114	114 00	September 28
Gainsborough	W. T. Fisher	88	88 00	October 12
Central Saskatchewan	G. T. Faulkner	100	100 00	October 6 and 7
Moosomin	J. Anderson	138	138 00	September 28
Wapella	A. Roberts	157	150 00	None
Moose Jaw	B. Fletcher	54	54 00	"
Lorne	A. McNabb	184	150 00	October 9
Carrot River	R. C. Grundy	75	75 00	September 28
Macleod District	J. Hicks	114	114 00	None
Fish Creek	W. G. Wolley Dod	149	149 00	September 28
Sheep Creek	C. Mickie	120	120 00	October 4
Duck Lake	C. Fisher	71	71 00	None
Medicine Hat	J. H. G. Bray	100	100 00	September 27 & 28
Maple Creek	H. A. Greeley	83	83 00	September 30
Pincher Creek	H. E. Hyde	95	95 00	October 14
South Saskatchewan	L. Schmidt	77	77 00	None
Edmonton	J. R. Turnbull	(No returns.)		...
South Edmonton	H. Wilson	205	150 00	October 4 and 5
Davisburg	W. D. Shattuck	102	102 00	None
Battle River	J. M. Skelton	(No returns.)		...
Lethbridge and District	C. B. Bowman	90	90 00	None
Regina	Wm. Trant	148	148 00	"
Wetaskiwin	A. S. Rosenroll	121	121 00	"
Calgary	T. B. Braden	recently organised.		

HERD DISTRICT.

Immediately after the department was organised, an effort was made to locate the various poundkeepers throughout the portion of the Territories set apart under The Herd Ordinance. The following is a list of the Poundkeepers acting on the last day of 1898:

NAME.	POUND.	P. O. ADDRESS.
E. S. Andrews	south-east quarter Section 30-36-5w3 M	Saskatoon.
T. Apperley	north-west quarter Section 20-15-2w1 M	Whitewood.
Peter Abrams	south-west quarter Section 4-4 3a-2w3 M	Rosthern.
L. Arnold	22-17-13w2 M	Indian Head.
C. B. Berckenhagen	north-east quarter Section 24-24-21w2 M	Strassburg.
J. G. Burke	south-west quarter Section 22-1-31w1 M	Elmore.
J. C. Boss	south-west quarter Section 34-17-10w2 M	Wosleley.
Jno. Beggs	north-west quarter Section 2-8-5w2 M	Clare.
Wm. Braithwaite	south-west quarter Section 18-19-12w2 M	Indian Head.
H. Bayless	south-east quarter Section 14-16-30w1 M	Welwyn.
Arthur Biggins	south-east quarter Section 2-15-3w2 M	Whitewood.
C. H. Brownrigg	south-west quarter Section 22-16-1w2 M	Whitewood.
S. Beach	south-west quarter Section 34-16-20w2 M	Regina.
J. F. Beasley	south-west quarter Section 22-18-17w2 M	Marlborough.
J. E. Battell	north-west quarter Section 36-16-27w2 M	Moose Jaw.
Geo. Bingham	south-east quarter Section 10-16-14w2 M	Indian Head.
Wm. Bird	north-east quarter Section 34-18-16w2 M	Qu'Appelle.
Wm. Brown	south-west quarter Section 4-17-16w2 M	"
Thos. Bunn	north-west quarter Section 30-16-18w2 M	"
Leslie Cowan	south-east quarter Section 24-4-31w1 M	Gainsboro.
John Cadden		Saltcoats.
James Campbell	south-east quarter Section 22-17-28w2 M	Moose Jaw.
W. Copeland	north-east quarter Section 10-17-26w2 M	Moose Jaw.
W. Cary	south-east quarter Section 3-19-11w2 M	Blackwood.
F. A. Clements	south-west quarter Section 32-2-11w2 M	Fairmede.
Richard Cail	north-east quarter Section 12-15-31w2 M	Cailmont.
T. H. Cochrane	north-west quarter Section 20-18-21w2 M	Wascana.
Alex. Campbell	south-east quarter Section 2-19-8w2 M	Tiree.
Clarence Bros		Wolseley.
W. H. Cathcart	south-east quarter Section 4-16-27w2 M	Moose Jaw.
S. Croqus		Moose Jaw.
W. Caldwell	south-east quarter Section 16-19-14w2 M	Qu'Appelle.
C. Davis	north-west quarter Section 36-16-2w2 M.	Whitewood.
J. Dunn		Summerbury.
W. Dickson	south-east quarter Section 30-19-12w2 M	Blackwood.
Jos. Darragh		Oxbow.
Henry Dickson	north-west quarter Section 2-20-2w2 M	Chickney.
W. Davis	north-east quarter Section 24-18-20w2 M	Regina.
Sergt. de Rossiter	Township 17 Range 20w2 M	Regina.
A. Elliott		Wolseley.
R. W. Elliott	north-east quarter Section 16-16-16w2 M	Qu'Appelle.
Geo. Ellis	south-west quarter Section 22-19-15w2 M	Qu'Appelle.
Wm. Freethy		Tregarva.
J. Fahlman	north-east quarter Section 32-15-17w2 M	Kronau.
H. L. Fysh	south-east quarter Section 6-16-25w2 M	Moose Jaw.
D. Fraser	north-west quarter Section 4-17-15w2 M	Qu'Appelle.
F. W. Green	north-east quarter Section 32-16-2w2 M	Moose Jaw.
L. Gavroy	south-west quarter Section 24-8-7w2 M	Alma.
J. Gillett	north-west quarter Section 34-16-18w2 M	Regina.
Jos. Goodman	north-east quarter Section 14-16-32w1 M	Hillburn.
Jos. Gray	north-west quarter Section 22-19-16w2 M	Qu'Appelle.
R. H. Henderson	south-east quarter Section 20-1-30w2 M	Winlaw.
L. H. Hoskins	south-west quarter Section 24-20-21w2 M	Craven.
G. B. Hughes	south-west quarter Section 6-3-22w2 M	Carnduff.
Jas. Harkin	south-east quarter Section 16-17-11w2 M	Sintaluta.
R. Hind	north-east quarter Section 20-18-22w2 M	Cottonwood.
J. F. Hartell	south-east quarter Section 21-19-7w2 M	Hyde.
A. Hogg	north-west quarter Section 18-17-32w1 M	Carnoustie.
C. Irwin	Section 2-7-8w3 M	Saskatoon.
R. C. Ireland	north-east quarter Section 16-15-32wPrin. M.	Red Jacket.
C. Jephson	north-west quarter Section 32-16-10w2 M	Wolseley.
J. Johnston	north-west quarter Section 36-7-6w2 M	Ellisboro.
W. Jolly	south-east quarter Section 6-19-9w2 M	Pheasant Forks.
J. Jasper	south-west quarter Section 32-12-33w2 M	Riga.
W. N. F. Kay		Maryfield.
Jno. L. Lytle		Balgonie.
Geo. Langley	south-west quarter Section 34-42-2w2 M	Rosthern.
B. C. Long		Carlyle.

HERD DISTRICTS.- *Continued.*

NAME.	POUND.	P. O. ADDRESS.
E. Love		Pasqua.
R. Matchell	south-east quarter Section 23-18-17w2 M.	Balgonie.
O. Mohman	north-east quarter Section 16-6-1w2 M.	Coalfields.
John Marton	north-west quarter Section 28-21-11w2 M.	Balcarres.
J. Mathews	north-east quarter Section 26-21-18w2 M.	Pheasant Forks
Wm. Morrison	north-west quarter Section 28-1-2w2 M	Boscurvis
Franz Muller	north-east quarter Section 18-19-17w2 M.	Hednesford.
G. Morgan	north-east quarter Section 24-17-13w2 M.	Indian Head.
Stewart Mitchell	north-west quarter Section 2-18-14w2 M.	Qu'Appelle Station.
D. W. McGregor	north-west quarter Section 16-16-6w2 M.	Grenfell.
Neil McDougall	south-west quarter Section 10-11-31w2 M.	Moosomin.
J. S. McCaughey		Alameda.
James McIntosh	north-west quarter Section 10-3-1w2 M.	Glen Ewen.
D. C. McDonnel	north-west quarter Section 36-15-7w2 M.	Grenfell.
D. McKaig	north-east half Section 22-18-10w2 M	Ellisboro.
A. F. MacMillan	Section 24-19-12w2 M	Katepwe.
Angus MacLeod	south-east quarter Section 24-16-5w2 M	Broadview.
Dan. McPherson	north-east quarter Section 12-13-32w1 M.	Moosomin.
Wm. H. McIllree	north-east quarter Section 36-18-19w2 M.	Regina.
Geo. McCartney		Moose Jaw.
D. McLean	south-west quarter Section 20-14-2w2 M.	Sunnymeade.
Kenneth McLay	north-west quarter Section 35-18-12w2 M.	Qu'Appelle.
A. B. Potter	south-east quarter Section 24-13-3w2 M.	Montgomery.
A. H. Powell	south-east quarter Section 14-18-29w2 M.	Caron.
Walter Parker	Section 20-15-3w2 M.	Whitewood.
Chas. Reed	south-west quarter Section 28-4-2w2 M	Alameda.
Wm. Rattray	south-east quarter Section 10-16-5w2 M	Broadview.
Wm. Rollins	south-west quarter Section 34-16-17w2 M.	Balgonie.
Henry Rowson	south-west quarter Section 30-18-17w2 M.	Balgonie.
W. Rothwell	east quarter Section 20-17-27w2 M	Moose Jaw.
A. Shatford	south-east quarter Section 16-3-30w1 M	Gainsboro.
S. Sykes	south-west quarter Section 16-2-31w1 M.	Carievale.
A. B. Smith	south-west quarter Section 24-13-33w1 M.	Moosomin.
P. Schneider	north-east quarter Section 10-22-31w1 M.	Langenburg.
Wm. Stilborn	south-east quarter Section 32-21-9w2 M.	Pheasant Forks.
S. Shaw	south-west quarter Section 28-14-1w2 M.	Benbecula.
C. Shannon		Grenfell.
E. Smith	north-east quarter Section 32-19-21w2 M.	Lumsden.
S. L. Sharpe	south-east quarter Section 12-14-32w1 M.	Moosomin.
G. Sylvain	Section 34-18-25w2 M	Moose Jaw.
Geo. Spencer	north-west quarter Section 28-17-15w2 M.	Qu'Appelle.
L. E. Simonin	Section 2-19-11w2 M	Lac Chapleau.
Thos. E. Truscott	Section 14-4-3w2 M.	Alameda.
Wm. Usherwood	north-west quarter Section 10-18-23w2 M	Pense.
J. F. Wallace	north-east quarter Section 6-8-1w2 M.	Manor.
R. White	Section 20-14-4w2 M	Maurice.
W. Welch	south-west half Section 31-16-7w2 M.	Grenfell.
Andrew Welch	south-west quarter Section 16-15-4w2 M.	Broadview.
Wm. Walkom	north-west quarter Section 16-3-7w2M.	Estevan.
F. G. Whiting	north-east quarter Section 28-18-15w2 M.	Qu'Appelle Station.

Prior to the organisation of the department no complete record had been kept of the various tracts which had from time to time been added to the herd district and it was therefore necessary to detail a clerk to copy all the Orders in Council on the subject from 1883 up to the time when the department was organised. This proved a very formidable task but is progressing as rapidly as possible and will, it is hoped, be completed at an early date.

As it is of very great importance that the poundkeepers on the outskirts of the herd district should be cognisant of the limits of the said district, an effort will be made during the coming year to prepare a map

showing in cross-hatching the area set apart under this ordinance. This information could very cheaply be transferred to a reduced edition of the present three-sheet Territorial map and be furnished poundkeepers, who may require the same, as well as the general public. Owing to the continual changes, it would of course be necessary to correct this map periodically in order to keep it up to date, which, however, could be done at small expense.

As soon as the district at present set apart under The Herd Ordinance has been plotted an attempt should be made to include in the same all fractions of townships affected, as it is very important to have the limits clearly defined and avoid all misunderstandings and trouble, which might easily arise owing to the irregular and confusing outline of the present district.

The following statement shows the number of animals impounded under The Herd Ordinance during the past year:

Horses	97
Cattle	54
Pigs	3

POUND DISTRICTS.

Previous to the enactment of The Village Ordinance of 1897 and the amendments to The Municipal Ordinance of 1898, the following pound districts were in existence under the provisions of The Pound District Ordinance:—Wolseley, Prince Albert, Edmonton, Lethbridge, Moosomin, Macleod, Whitewood, Moose Jaw, Saltcoats, Gainsborough, Fleming, Olds, Medicine Hat, Grenfell, Lacombe, Red Deer, Yorkton, Maple Creek, Indian Head and Regina. In addition to the above there are still one or two of the districts established under the Revised Ordinance of 1888, but as the appointments of poundkeepers for these districts have lapsed and no new ones have been made and no demands have been made for any, the districts are for all practical purposes non-existent. Under The Village Ordinance, villages have now the power to appoint their own poundkeepers and under the amendment to The Municipal Ordinance, above referred to, municipalities have power to pass bylaws to regulate the running at large of animals within their boundaries and to appoint their own poundkeepers. All such poundkeepers, however, are required under the respective Ordinances providing for their appointment, to make certain returns to the department under the provisions of The Pound District Ordinance. Most of the municipalities have already taken steps to appoint poundkeepers in accordance with the new powers given them, and the villages will also deal with the matter as soon as their respective annual business meetings take place.

ESTRAY ANIMALS.

The following statement shows the number of animals reported estray to the department and advertised in the official gazette during the past season:

Estray Animals:

Horses	190
Cattle	149
Pigs	44

Estray Entire Animals:

Stallions	35
Bulls	15

It is an unfortuate fact that the provisions of The Estray Animals Ordinance are but very hazily understood by the average rancher in the west. I may merely mention that not very long ago it came to my notice unofficially that a steer had been sold in the Red Deer district and the proceeds presented to a Calgary charitable institution. It is needless to observe that this is altogether in contravention of the law. I would recommend that at the earliest possible moment a poster be prepared setting forth the most important provisions of The Estray Animals and Entire Animals Ordinances and that the said poster be widely distributed throughout the western portion of the Territories. If our farmers and ranchers only fully understood the great advantages which would accrue to them if the provisions of The Estray Animals Ordinance were rigidly observed and all cattle were branded with recorded brands only, it would facilitate matters greatly. As soon as a notification is received in this department to the effect that an animal has been taken up under this ordinance—which notification is supposed to convey a full description of the animal, as well as a description of the marks and brands upon the same—the clerk in charge of the brand records makes a search for the name and address of the owner of the brand. If the brand in question is on the records of the department the following form of circular is then mailed to the owner of such brand:

This Department has been notified that there on the premises of Sec. Tp. R. W. Meridian, branded on . As it is thought that you may be interested in the animal referred to, it has been considered well to advise you, in order that you may, if you see fit, place yourself in communication with the party above mentioned.

As soon as the time arrives, when all animals running at large shall be branded with recorded brands, and the provisions of The Estray Animals Ordinance thoroughly understood and appreciated, the loss of any animal by straying will naturally become a practical impossibility. The fact of the brand records being kept in the department dealing with the administration of The Estray Animals Ordinance makes it possible and convenient to place the captors of the estrays in communication with the probable owners of such animals, or at least with a party who might be in a position to give such information as would lead to the discovery of the owners.

PRAIRIE FIRES.

The question of prairie and forest fires is a very serious one. Annually, millions of feet of merchantable timber and large areas of valuable pasture are being burned up, not to mention the occasional destruction of hay or grain stacks or other property, as well as the frequent loss of life. Years ago the Indian population were in the habit of setting fire to the prairie in order to celebrate occasions of jubilation and to convey signals from one point to another, and even at the present day the native Indian is very careless in this respect.

The rapid drying up of lakes, sloughs and hay meadows renders the danger greater than ever. There can be no doubt that although the denser settlement of the country, up to a certain point, will increase the danger, still the construction of roads incidental to such settlement will have a tendency to materially confine any area burnt over. I am inform-

ed that the Dominion Government is taking active measures towards the construction of proper fireguards in the timber limits controlled by it, and it is hoped that this will be the means of preserving to the country vast areas of forest so indispensable from a climatic point of view, to the successful growing of crops.

When the department was first organised, I found that no record had, in the past, been kept of appointments of fire guardians. Realising the great usefulness of such officials, if kept in close touch with the department and properly instructed, an attempt was made to compile a schedule of these officers. The records for years back were searched and a letter sent to each person of whose appointment record could be found, in which he was requested to state whether he wished to continue in his office or desired to be relieved of the same. The result was that out of some 500 or 600 only 160 expressed their willingness to act. These men were reappointed and they have all been kept informed as to the provisions of, and the amendments to the ordinance under which they act. In addition to the above all justices of the peace, members of the North-West Mounted Police force and overseers of local improvement districts are *ex officio* fire guardians under The Prairie Fire Ordinance.

In view of the fact that great ignorance prevailed throughout the country as to the exact provisions of the Ordinance, and also owing to very important changes having been made in the same during the session of 1898, a poster headed "Warning to the Public" was issued from the department, in which was set forth a resumè of the said provisions. Two thousand of these were printed and distributed to all overseers of local improvement districts, detachments of the North-West Mounted Police, postmasters in the North-West Territories, fire guardians, secretary-treasurers of school districts in the Territories, all members of the Legislative Assembly and to all newspapers published in the Territories. The total number sent out reached 1,437.

An attempt was made to take up the question of fireguards with the various railway companies operating within the Territories, and copies of the "Warning to the Public" were also furnished each roadmaster and railway section foreman within the Territories. Amendments to The Prairie Fire Ordinance prior to 1898 were badly needed, as regards the provision dealing with fires set out by railway employees. The effect of the old Ordinance was practically to prevent the railway companies from taking proper steps to confine prairie fires started by locomotives, owing to the stringent conditions imposed regarding the burning of fireguards.

GAME PROTECTION.

Considerable discussion has taken place in the press during the past year in connection with the question of game protection, and in order to obtain reliable information on this subject, the following letter was addressed to all game guardians:

As indicated in a former letter, steps have recently been taken by this department to place the whole of the game guardian service on a more efficient and useful basis, and it is the intention that in future the department should be kept in close touch with the various members of the service, in order that effect may be given to the provisions of the ordinance dealing with the protection of game.

It is assumed, owing to the fact that there is no direct remuneration connected with this office, that the present members of the service are all public spirited men, more or less interested in the preservation of our game.

A great deal of discussion has recently taken place in the press of the Territories respecting the advisibility of making certain changes in the law, and in order to obtain practical information on the subject, the commissioner has directed me to place myself

in communication with our game guardians throughout the country. I enclose herewith a blank form, and should be glad if you would be kind enough to let me have your opinion on the various provisions of The Game Ordinance referred to.

I enclose herewith a copy of The Game Ordinance, with amendments up to date indicated in red ink. I might, however, call your attention to the fact that a subsection has been added to Section 17 providing that the license mentioned therein shall commence on the 1st August and expire on the 31st December in the year in which it is issued, and also that the licensee shall only have the right to shoot any animal or bird after the expiration of two weeks from the first day on which such animal or bird may lawfully be killed by a resident of the Territories.

The following are the questions asked upon the blank form referred to in the circular letter:

I. Have you any changes to suggest in Section 1?

II. Do you consider the dates fixed in section 3 (b) and (2) the most advantageous? If not, what dates would you suggest?

III. Have you any improvements to suggest in Section 3 (c)?

IV. Are you in favour of the provisions of section 17?

The following is a summary of the replies received:

Question Two.—Six are in favour of closing the season before the 1st of December. Eleven place the date between the 15th and 31st of December, while thirteen are opposed to closing the season until the 1st to the 31st of January. The consensus of opinion seems to be that the open season should commence between the 15th of September and the 1st of October. One suggests that Prairie Chicken and Partridge be preserved for three years in Northern Alberta.

Question Three.—In two cases the opinion is expressed that there is no necessity for protecting migratory birds, others claim that the shooting of geese in the spring is not desirable as it leads to the destruction of duck during the close season. Forty-five express themselves as being in favour of present legislation prohibiting spring shooting of duck. Five suggest that the close season be limited to from 15th of May to 23rd August and three from 1st of May to the 23rd of August. Twenty-five express the opinion that spring shooting should not be prohibited.

Question Four.—Sixty-six approve of the license system; eight object. Three recommend that the license be placed at from $5.00 to $7.00 and two are in favour of charging $25.00.

In nearly all the returns complaint is made of the merciless slaughter of all kinds of game by the Indians. On the twenty-fifth of July a report was received from Mr. W. H. Cooper, a game guardian at Edmonton, in which he complained of Indians killing game in the vicinity of Cooking Lake. The Indian department was communicated with at once and asked whether the provisions of The Game Ordinance applied to these Indians. The reply was that it did with certain restrictions. Since that time several complaints were received and an effort is now being made to define these restrictions and arrive at a definite understanding in the matter with the Indian department. It is supposed that the rights of each tribe are influenced to a very great extent by the nature of the treaty, and in the interest of game preservation it is hoped that the department will be in a position to get the privileges of each tribe clearly defined and the whole staff of game guardians properly instructed before the spring shooting season commences, in order that prosecutions may be made in all cases where Indians transgress the law.

My remarks in connection with the state of the fire guardian service upon the organisation of the department apply with equal force to that of the game guardian service.

EXTERMINATION OF PREDATORY ANIMALS.

Below will be found a statistical statement showing the expenditure upon the destruction of grey wolves and coyotes since the 31st August, 1896:

Grey Wolves.

31st August, 1896, to 31st August, 1897—401 at $5.00.....	$ 2,005 00
Sixteen months to December 31st, 1898—906	2,248 00
	$ 4,253 00

Coyotes.

31st August, 1896, to 31st December, 1898—1063 at 50 cents	$ 531 50
Total for Grey Wolves and Coyotes from 31st August, 1896, to 31st December 1898.....	$ 4,784 50

Grey Wolves.—During the year the sum of $2,210.00 was paid into the hands of The Western Stock Growers' Association to be applied on the payment of wolf bounties, upon regulations approved by Order in Council. The following were the amounts paid: For every bitch wolf over three months old, $7.00; for every dog wolf over three months old, $5.00; for every wolf pup under three months old, $2.00.

In addition to Mr. F. Lapointe, who acted for the department in the Wood Mountain district, the following inspectors were appointed on the recommendation of The Western Stock Growers' Association: Calgary, Mr. W. G. McKay; Macleod, Mr. J. Black; and Maple Creek, Mr Horace A. Greeley. The latter gentleman resigned his appointment on the 15th December, and Mr. Stewart, of Maple Creek, was appointed in his place. The following are the regulations under which the said bounties were paid:

The pelt (including the head) of each timber wolf upon which bounty is claimed must be produced intact to the inspector by the person claiming bounty.

The issuer of the warrant shall use every means in his power to satisfy himself as to the sex where bounty is claimed on adult wolves. Bounties on the adult scales are only to be paid when the issuer is satisfied that the animals are sufficiently developed to be destructive to themselves.

Upon the production of the pelt of any timber wolf to him, and on being satisfied that the animal killed was a timber wolf and not a coyote or other species of the wolf family, killed after the date herein specified, the issuer of the bounty warrant, shall punch a portion out of each ear, so as to effectually prevent duplication; and may issue a warrant in the prescribed form of the claimant for the amount of the bounty.

A cheque will be issued to the person named in the warrant (or his assignee) upon the warrant being sent as a voucher to the secretary of the Western Stock Growers' Association at Macleod.

The inspector shall number consecutively and keep a list of all warrants issued, and shall send a copy of such list to the secretary of the association at the end of each month.

When the North-West Government appropriation made for the purpose of enabling the association to pay wolf bounties is exhausted the secretary shall send all warrants and cheques issued in connection with such warrants to the Commissioner of Agriculture at Regina.

Unless otherwise specified these regulations expire and have no effect after the 31st December, 1898.

In addition to the government bounty, this association paid a private bounty on all bitch wolves, which in most localities is supplemented by an additional bounty raised by contribution of individual stockmen in the district.

The amount of damage done by these animals is something astounding. Unlike the coyote, which usually confines itself to acting as scavenger,

the grey wolf requires freshly killed meat for every meal. It would be impossible to form an estimate of the losses on the ranges which may be attributed to the wolf. It is safe to state, however, that a stockman would consider the payment of $20.00 or $30.00 for the destruction of a wolf a very profitable transaction. It is alleged that individual wolves have often caused the loss of several hundred dollars' worth of stock before they have been hunted down.

Coyotes.—No provision was made in last year's estimates for the payment of bounties on coyotes or prairie wolves. The subject is one which has engaged the attention of the department to a considerable extent during the past year. The fact cannot be disguised that the coyote has been one of the most fruitful sources of discouragement of the poultry and sheep man, to say nothing of the havoc made among early and weak calves on the ranges. It is a lamentable fact that in the Province of Manitoba small sheep owners are gradually going out of the business, and it is worthy of consideration whether steps could not be taken that would encourage the keeping of sheep in a limited number in the northerly and easterly portions of the Territories where at present very few flocks are kept. Although the damage done by coyotes is of serious proportions, the question arises whether any scheme for dealing with the eradication of these pests could be promulgated within the limits of practical politics. It may be taken for granted at once that the principle underlying the extermination of these destructive animals by payment of bounties should be one embodying the payment of a bounty sufficiently large to induce people who would not otherwise do so to engage in the business of hunting these animals. If the bounty is small it is an absolute waste, owing to the fact that the money would be expended upon the payment of bounties upon animals which would be destroyed in any event. In considering this phase of the problem, one should bear in mind the experience elsewhere in regard to adopting heroic measures in the way of bounties. It is still fresh in the mind of everyone, that the State of Montana proposed, some years ago, to effectually eradicate the prairie dog, and a generous bounty was provided in order to make the work thorough, prompt and comprehensive. The drain upon the treasury grew out of all proportion to anticipations and the result was that a special meeting of the Legislature had to be called to repeal this measure, or the State would have become bankrupt. When one comes to consider the enormous area covered by the North-West Territories, with its scattered settlement, affording an excellent breeding ground for the coyote—in many cases right in our midst—the large extent of unsettled country to the north of the Territories, from which coyotes drift down during the hard winters, one almost despairs of suggesting any means for dealing with this pest. One must admit that whereas the gopher can be poisoned off within limited districts, the migratory habits of the coyotes render it absolutely impossible to attain any results unless a scheme is outlined dealing vigourously and simultaneously with all the outlying districts of the Territories and within the country to the north thereof, and this seems, indeed, a hopeless task.

The conditions in the state of Montana very much resemble those prevailing in the Territories; but with regard to the extermination of predatory animals, that state has the advantage of the North-West Territories in not having an enormous area of unsettled country adjacent to it. The following statement shows the amount of money expended upon the destruction of wolves and coyotes in that State:—

Total coyote claims paid for year ending 30th November, 1898	$ 71,262 00
Total wolf claims paid for year ending 30th November, 1898	17,607 00
	$ 88,869 00
Total coyote claims paid for the State during 1895, 1896, 1897 and 1898	$251,625 00
Total wolf claims for the State during the same period (not including special County bounty)	65,823 00
Total amount expended for four years	$317,448 00

It is of peculiar interest to the people of the North-West Territories to follow the history of the vigourous attempts made in that State towards the extermination of coyotes. To give some idea of the generous manner in which questions of that kind are dealt with, I may state that in some portions of Montana a private bounty of as much a $30.00 per head was paid for grey wolves *in addition to the State bounty* and a private contribution of such a nature of from $10.00 to $18.00 is by no means unusual. The total revenue of the State from the special bounty tax for the years of 1895 to 1898 inclusive, upon an aggregate assessed value of stock of $79,500,000.00 amounted to $112,671.71. The average proportion of this tax which was expended upon the eradication of grey wolves and coyotes assessed on the horse and cattle interests was 73 per cent., while the sheep men contributed on a basis of 27 per cent. In the report of the Bureau of Agriculture, Labour and Industry for 1897, opinions of stock owners throughout the State on the subject of coyote bounties were quoted. The following are selections:

No one wants it in my section unless it is a sheepman. His herder, however, is ample protection for him. In north-eastern counties it may be different on account of timber wolves. A one dollar bounty will kill as many coyotes as three dollars, save money to the State and diminish perjury. . . . I do not think it is, the same number would be killed without the law, and then the extreme law is a temptation for some to gather skins outside the State, bring them in, swear falsely and get the bounty. . . . None. It is outrageous and a fraud. . . . Not any effect whatever. After twelve years' experience in sheep raising on this creek, I find the coyotes as bad as ever; if not more animals they are more sly and more difficult to keep out of the sheds at night.

There is another danger in placing the bounty too high, namely, that of practically encouraging the breeding of coyotes. I am personally aware of a case in Manitoba where a number of old coyotes were protected in order to get the provincial and municipal bounties on the young ones each year. A further objection to a high bounty is the fact that the Indians are usually the only persons who will devote their entire time to the hunting of coyotes, and owing to their indolent habits the offer of a large reward is lost on them. They will hunt until they have sufficient to keep them alive for a short time, and when they have no more money left they will hunt coyotes again. There can be no doubt that the most effective means of dealing with coyotes is the employment of hounds. Whereas it is a physical impossibility to rid the district of coyotes by killing, owing to the fact that any deficiency in the number is soon supplied from outlying districts, it is found that the presence of hounds in any locality has the effect of frightening these animals away. It is said that as soon as a coyote realises that there is something which can run faster than he can in a given locality, he begins to think that it is an unhealthy portion of the country to reside in, and consequently keeps clear of it. It is worthy of consideration whether, when the wholesale poisoning of coyotes is indulged in, the cure is not worse than the disease. The

effect of such a measure is usually the killing off of all the best dogs in the district, and thus destroying the natural and most formidable enemy of the coyote.

The following is a quotation from one of the agricultural papers of the west:

. . . Texas has the champion wolf-killer of the continent. Last year he killed over 1,100 wolves, a few panthers and thirty deer. When he started the business, a few ranchers with large herds made up for him a salary of $40 a year. They now pay $140 and that along with State bounties and the price of hides, makes up over $4,000 of yearly income. He is known all over the country as Wolf Martin, and keeps eight fine saddle horses, a good pack of wolf hounds and 200 large wolf traps. The traps he puts out at certain points along the roads and trails and each morning he makes the circuit with his dogs. The traps are left loose and when he finds one gone, the dogs are placed on the trail and usually in a short distance come upon the trapped wolf. The dogs live on the wolves killed, eating the raw meat. Sometimes they become too fat from over-eating and have to be chained up. During his long experience as trapper, Martin has learned many curious things about the animals in his section. The wolves he says are always to be found along the roads at night, rather than off in the brakes, so he always places his traps along the roadside. He uses no bait on his traps, but has a substitute for bait in a kind of fluid of his own discovery and manufacture. With the fluid he saturates a paper or cloth and buries it in the ground near his trap. He always carries a bottle of the fluid with him and claims it to be superior to any bait. . . .

It is possible that something along these lines might be attempted in districts where small flocks of sheep are kept.

The whole question is a very difficult one and beset with dangers everywhere. It appears to me that effective work might be done by dealing with the question through the co-operation of agricultural societies. I will not dwell on the useful feature of the coyote pest; but it is argued with some reason, that such a one exists in the destruction of gophers. There can be no doubt that he displays very commendable energy in digging out these enemies of the farmers. It is, however, equally certain that he furnishes but a very expensive agency for gopher extermination.

Mr. T. S. Palmer, the first assistant in the Biological Survey Branch of the United States Department of Agriculture, who has devoted a great deal of study to the whole question of extermination of noxious and predatory animals, with special reference to the payment of bounties or rewards, sums up his investigations as follows:

(1) Bounty legislation has existed in the United States for more than two centuries and a half, and has been thoroughly tested in most of the States and Territories.

(2) Rewards have been paid (*a*) on large animals, such as wolves, coyotes, bears and panthers; (*b*) on small animals, particularly gophers, ground squirrels and rabbits; (*c*) on a few birds, such as crows, English sparrows, hawks and owls.

(3) This legislation has probably involved an expenditure of over $3,000,000.00 in the last quarter of a century, and the expense seems to be increasing instead of decreasing. Single laws have caused an outlay of nearly $200,000.00 in less than two years, and it is safe to say that any act which carries a sufficiently high reward to insure its operation will cost from $5,000.00 to $20,000.00 per annum.

(4) Objections to the bounty system may be grouped under four main heads: (*a*) Expense, which is usually out of all proportion to the benefit gained, and may be greater than the country or State can afford; (*b*) impossibility of maintaining bounties in all parts of an animal's range for any length of time; (*c*) impossibility of maintaining equal rates in all States; (*d*) impossibility of preventing payments for animals imported from other States, for counterfeit scalps, or for animals raised especially for bounty. These objections have never been satisfactorily overcome, and most laws have failed through one or another of these causes.

(5) Bounties have not resulted in the extermination of a single species in the United States and have failed even in the island of Bermuda, which has an area of less than twenty square miles.

(6) Rewards for wolves, coyotes and panthers are now so generally paid as to check the increase to some extent, but premiums on ground squirrels, gophers or other small mammals have accomplished little or nothing, and bounties on birds may do great harm by encouraging the killing of useful species through ignorance.

(7) Extermination of noxious animals is usually slow and can be accomplished more

effectually and economically through the efforts of individual land owners than by the profuse expenditure of public funds.

It will be seen from the above that the result of an enormous and, to a large extent, systematic expenditure in the United States covering a number of years, and one which has fairly put the principle involved in the payment of bounties upon wild animals to the test, has not by any means been satisfactory. Bearing this fact in mind, and taking into consideration the limited revenue of the North-West Territories, rendering it impossible to deal on a lavish scale with this subject, it would appear advisable to scrutinise closely any scheme having in view the expenditure of public funds upon the encouragement of the extermination of noxious animals.

TERRITORIAL HOSPITALS.

Great difficulty was experienced in dealing with the returns from Territorial hospitals owing to the fact that no definite form was prescribed. I may, however, state that a set of forms is now being drafted and will be submitted for approval in the course of a short time.

The following is a schedule showing the work of Territorial hospitals during the current departmental year—or more correctly speaking for the thirteen months ending the 31st December, 1898:

HOSPITAL.	TOTAL NO. OF PATIENTS.	TOTAL NO. DAYS TREATMENT.	NO. OF DAYS OF FREE TREATMENT.
Macleod	263	6000	485
Saltcoats	49	1328	374 1-2
Edmonton	453	7023	5522
Galt Hospital	300	8953	1843 1-2
Calgary	364	5876	3142 1-10
St. Albert	57	839	835
Holy Cross	327	5966	2492 1-2
Medicine Hat	413	9991	6869
	2226	45976	21564 1-5

I question whether any public funds are being expended on a more worthy and useful object than the encouragement of hospital work. Some of the institutions mentioned would compare favourably, in respect to buildings, appointments and staff, with hospitals in larger towns within older settled districts. There is a peculiarly appropriate field for hospital work in the North-West Territories. A large proportion of our settlers are unmarried men, often living alone and miles removed from the nearest charitably inclined neighbour, who could look after them in time of sickness or accident. They are fortunate, indeed, if they can enjoy the luxury of proper care and skilled attendance in a well regulated hospital in such an emergency. I shall not even attempt to describe the dreadful misery which women would in many cases be called upon to endure, to say nothing of loss of life or permanent injury to health, were they not able to utilise the maternity wards of some of our hospitals. Too much stress cannot be laid on the necessity of further developing this feature of our hospital work.

The country owes a great debt of gratitude to the public spirited people who have, in the past, so generously supported these institutions and who bear the large expense incidental to the efficient management of the

same. It can, of course, be readily understood, that the Territorial grant, amounting as it does to only a fraction over thirteen cents per hospital day, or on a basis of 25 cents per day for each free patient treated, will not begin to reimburse hospitals for charitable work done.

The internal management of Territorial hospitals is as economical as anywhere in Canada. Although I have been unable to obtain absolutely correct figures from all institutions embodied in this report as to the cost per hospital day, by comparing the cases where these statistics were available with the published reports of hospitals in eastern Canada and British Columbia, I find that the cost per day of maintaining a patient in Territorial hospitals is generally lower than elsewhere. It would be well if secretaries of all our hospitals would furnish the department with an annual statement showing receipts and expenditure as well as other information of interest.

Much has been said about the successful settler being the best immigration agent. It may fairly be argued, that the presence in a new country such as this, of hospitals and similar institutions following in the train of civilisation, is no mean agency through which to attract the attention of intending immigrants of a desirable class, and the appropriation of the Government in this direction may therefore be considered almost an expenditure on account of immigration.

The large influx of settlers during the past year has thrown a great burden upon residents in the vicinity of nearly all Territorial hospitals and from present indications this burden is not likely to decrease from year to year, in fact, quite the reverse may be expected. Indigent immigrants are brought to these institutions suffering from diseases requiring careful nursing and medical attendance and become a tax on the voluntary contributors who as a rule find the task of providing the necessary funds for keeping their hospitals running under normal conditions quite heavy enough without being called upon to pay for the treatment of absolute outsiders. Steps have been taken by the Dominion authorities to reimburse a few of the hospitals the outlay incurred in caring for immigrant patients, but this help should be generally extended.

It is sad to contemplate the splendid opportunities which people of means and of a philanthropic turn of mind are missing in failing to give generous support towards the extension and maintenance of hospitals in the North-West Territories. It is hard to conceive of a more worthy and deserving object for generosity. The most pitiable spectacle of all, however, presents itself when wealthy men, who in many cases owe their fortunes to the west and the western settler, make lavish gifts towards the erection of institutions in large cities in eastern Canada, calculated to satisfy the craving of the public for mere amusement, and costly enough to erect and maintain a dozen cottage hospitals extending help to the sick and suffering in as many sections of this country, while the very people, who probably most contributed towards their wealth are struggling to maintain hospitals in the most economical manner possible and often become themselves victims to lack of adequate hospital facilities. The welfare of Canadian commerce more or less depends upon the settlement and development of the West, and the men who are willing to bear the hardships of pioneering in accomplishing that object are not, as a rule, sufficiently well off, nor should they be called upon, unaided, to maintain charitable institutions such as these, which should be looked upon rather as of national than local concern. The most generous construction which can be placed upon this deplorable apathy of wealthy people in the East is that they are not conversant with the position of

affairs and, therefore, fail to recognise their responsibility and opportunities in this respect.

I herewith beg to append the reports of the Inspector of Territorial Hospitals, dealing separately with each instution now on the schedule:

Report on the Medicine Hat General Hospital.

I have the honour to report that I inspected the Medicine Hat Hospital on Thursday, February 2, 1899.

There were sixteen patients in the general wards, and three incurables. I have written a seperate report regarding the latter.

I found everthing in the hospital in good order, although there was a little more confusion than is generally noticeable, owing to a serious accident having happened in the vicinity that day, and the dead and dying having been brought there for attention. There were no complaints from the patients as to food, nursing or attendance.

Among the patients in the hospital at the date of my inspection were four of the nursing staff—all convalescents from typhoid fever—a rather noticeable fact.

A new water supply is being secured at an expense of some $600.00, and it is probable that this experience will not be repeated.

The Medicine Hat hospital is the only one in the Territories employing a resident medical superintendent, and it does a large amount of general work; its clientele being drawn from all parts of the Territories.

The maternity cottage was empty at the time of my visit, and having been just freshly painted and furnished up, presented a very neat and attractive appearance.

An examination of the register and copy of the last half-yearly report showed that the books were properly kept.

Report on the Edmonton General Hospital.

I have the honour to report that I visited and inspected the Edmonton General Hospital on Friday, January 27, 1899.

There were sixteen patients in the institution at the date of my visit.

With regard to the general condition of the hospital, I have only to repeat what I said in my report of 1898, that I found everything about the wards spotlessly clean and in good order, the patients contented, and no complaints as to food, nursing or attendance. I went carefully over the register, and on comparing it with a copy of the report for the half-year ending December, 1898, found that there were no discrepancies. In fact, there can be nothing but praise for the internal economy of the institution, for the care and attention bestowed on patients, for the scrupulous neatness and cleanliness observed everywhere, and for the quiet, well regulated tone of the establishment.

There are certain points, however, in which this hospital fails to conform to the idea of a general hospital, and to these I desire to call your attention. The first is one which I alluded to in my report of 1898: lack of surgical nurses and the impossibility, therefore, of the best work being done in the hospital. It is much to be regretted that the authorities have not seen their way clear to adopt my suggestion, as they would have thereby enhanced the usefulness of the institution.

The second is the fact that the hospital is not now prepared to take maternity cases. They have the accommodation, and in special cases and by private instructions from Montreal, the accommodation can be utilised

by getting a nurse in from the outside, but so far as the general public is concerned, the hospital is not a hospital in which maternity cases can be cared for. I understand that the reason lies in the fact that the Sisters are precluded by their obligations from nursing these cases.

The third point is that the Mother Superior claims and exercises the right to admit patients without a medical certificate or order from a doctor. This is not as it should be. It exposes the other patients to the danger of the admission of an infectious case, it opens the door for admission of cases not suitable or not requiring hospital treatment, and it sometimes works an injustice to the doctors by patients being admitted on the free list who are able to pay not only hospital dues but medical fees. The Government is not specially concerned to protect the doctors in this latter case, but it *is* concerned to protect itself; for every patient who is admitted on the free list and who is able to pay is defrauding the Government to the amount of the per capita grant to pauper patients. I do not pretend to say that this abuse of medical and hospital charity has reached any great extent in the North-West, but it undoubtedly exists, and as it has become a crying evil in other places, it is desirable that every precaution should be taken to guard against it here.

This question was the crucial one in the conference between the medical board and the governing authorities of the hospital to which I alluded in my general report. The medical board asked that no charity patients are to be admitted without "an order from the doctor of the month, or an order from a member of the medical board, except in case of emergency."

The answer to this was contained in a letter from the Mother Superior at Montreal, the head of the order, to the Mother Superior at Edmonton, and was in the following language. I quote from memory:—

"You, as Mother Superior, have been placed in charge of the Edmon-
"ton hospital and you have the right to admit patients."

Now this is a very positive declaration, and in my opinion it conflicts with the first principle on which a general hospital should be conducted. An incidental feature of the situation was that it threatened a rupture between a large number of medical men at Edmonton and the hospital, always a regrettable occurrence, and with the object, if possible, of preventing this, and obtaining some modification of the Mother Superior's declaration, I went and saw Father Leduc who was acting for the hospital. Father Leduc received me courteously and we discussed the matter in all its bearings, but I regret to say that he was unable to consent to any alteration or compromise. He pointed out that the property belonged to the Grey Nuns, and that they therefore had the right to make regulations, that there were other doctors in Edmonton (which was quite true) who would do the charitable work and that it was advisable that the Mother Superior should have the power to admit, as it was not alone a hospital but a charitable institution.

This was the view of the matter which precluded any possibility of settlement, and I learned with regret, but without surprise, that the medical board had resigned the next day.

Now the Government has nothing to do with any dispute between the hospital and the doctors, but it has a very plain duty to perform in seeing that funds set aside for aid to hospitals are not devoted to charitable institutions.

If this view is correct, it will have to deny the right of the Mother Superior to admit patients, and require that none be admitted without the order of a regularly qualified medical practitioner. The Sisters have

abundance of room in which to carry out their charitable work, but a sharp line of demarcation should be drawn between this and the actual work of the hospital.

For further suggestions as to form of admission, etc., I beg to refer you to my general report.

Report of the Calgary General Hospital.

I beg to report that I visited and inspected the Calgary General Hospital on Monday, January 30th, 1898.

There were only eight patients in the hospital at the date of my inspection.

The wards were clean, everthing about the hospital was neat and in good order and there were no complaints as to food, nursing or attendance from the patients

A comparison of the register with the last half-yearly return showed that the books were properly kept and apart from changing three patients (aggregating one hundred and seven days) from the free to the paying class—a mistake which has been made through inadvertence—there was nothing to which exception could be taken.

The hospital is well conducted and is doing good work. Practically all the surgery in the district is done here; the reason being that they have no surgical nurses and no modern operating room at the Holy Cross.

A maternity cottage and nurses' home in connection with the hospital is projected and will probably be built and equipped during the coming summer, which will greatly enlarge the usefulness of the institution.

Report on the Galt Hospital.

I beg to report that I visited and inspected the Galt Hospital on Friday February 3rd, 1899.

There were fifteen patients in the hospital at the time of my inspection, particulars regarding whom may be found in appendix.

Everything was clean and in good order about the wards and there were no complaints from any of the patients.

A comparison of the register with the last half-yearly report showed no discrepancies. This hospital is maintained largely by monthly deductions from the pay of the men employed by the Railway and Coal Company, and the position of these men when they become patients—whether they should be regarded as free or paying patients—is now, I believe, the subject of correspondence between the hospital authorities and the department.

Since the date of my last inspection the upper flat of the building has been finished, thus considerably enlarging the accommodation which was severely taxed during the last year and a half by the construction of the Crows' Nest Pass Railway. It is also intended to enlarge and improve the operating room in the spring, which will still further increase the facilities for surgical work, of which a large amount finds its way to this hospital.

There were seven cases on the register remaining in the hospital over one hundred days, since the 1st of July 1898, but on examination I found they were all cases requiring hospital treatment for long periods and they could not have been discharged sooner.

I am glad to be able to say that this hospital has been, and is, doing good work, and that it is an institution which is a credit to its founder and to the people of Lethbridge.

Report on the St. Albert Hospital.

I have the honour to report that I visited and inspected the St. Albert Hospital on Thursday, January 26, 1899.

There were eleven patients in the institution at the time of my visit. The wards in the hospital were in good order and there were no complaints from the patients as to food or attendance. The wards are in one of the mission buildings, and as I remarked in my report, dated May 3rd, 1898, while the accommodation provided "is an admirable provision for "such a large mission as St. Albert, it is not well adapted for the use of "the general public, and since the establishment of the hospital at Ed- "monton has become practically unnecessary."

The fact of there being eleven patients in the hospital at the time of my second visit may seem to invalidate the conclusion arrived at on my first visit in 1898, but a consideration of facts presented below will show that that conclusion was not very far wrong.

1. Not one of these eleven patients was admitted on the order of a doctor or a medical certificate stating that the patient was a fit subject for hospital treatment.

2. Not one of them was under treatment by a doctor, although their diseases rank from sore throat to dropsy.

3. Six of these eleven patients were pupils in the orphanage or school of St. Albert, of which the hospital is now an appendage, and while they might be properly inmates of an infirmary attached to the mission, they should not, in my opinion be classed as general hospital patients.

4. Two of these brought from Edmonton South, and taken past the door of the Edmonton General Hospital nine miles out into the country, to get the advantages of the presumably superior (*sic*) facilities of St. Albert.

5. The only registered medical man in St. Albert informed me that he had not sent a patient to the hospital nor treated one there during the whole year, and appeared to be rather surprised that an hospital was in existence so near to him.

Of the other five patients *not* attached to the mission, one was a patient who had been treated by Dr. Harrison in the Edmonton General and whose disease was put down as debility; another a woman who had been ill-treated by her husband; another who was suffering from dropsy, a grave spmptom; another with a "sore throat," all the way from Beaver Lake, and another with rheumatism, still further, from Macleod.

It is only fair to say that these patients were all under the care of a Sister, who I was informed by the Mother Superior had had thirty-six years experience in the treatment of the sick and ailing, and I am bound also to say that they did not appear to be suffering very much from the want of services of a "regularly qualified medical practitioner!" I am also glad to be able to testify to the unremitting care and attention that the Sisters bestow on the poor and afflicted, and to their unselfish and unrequited devotion to the cause of duty, but as an official appointed to see that the hospitals in the North-West are being conducted along the lines which govern hospitals in all other states and countries, it becomes my plain, if unwelcome, duty to say in the first place that the St. Albert

Hospital does not fulfil this condition, and in the second to reiterate my conclusion of last year, that it is not a public necessity.

A wish or feeling to justify a report made in 1898 does not in the slightest degree influence my present attitude. I would be glad to acknowledge that a fuller knowledge of the situation and possibly a changed and developing condition of affairs, so far as hospital work was concerned, made the opinion arrived at in 1898 untenable, but I think the facts above briefly noted speak for themselves.

A man or a woman who is sick enough to go to a hospital should have the certificate of a doctor to that effect.

He or she should always be under the care and treatment of a regularly qualified medical practitioner.

These are axioms. Another and important fact in the connection is that the Edmonton General Hospital is within easy reach of the district and is amply sufficient for the wants of that section of the country.

For these reasons I have to recommend that the government grant for the patients in the hospital at the date of my inspection be withheld, and that the hospital itself be withdrawn from the schedule of those entitled to government aid.

Report on the Holy Cross Hospital.

I have the honour to report that I visited the Holy Cross Hospital, Calgary, on Tuesday January 31st, 1899.

There were ten patients in the hospital at the date of my inspection.

The wards were clean, everything was in good order and there were no complaints from any of the patients. I am pleased to be able to say that for absolute cleanliness, quietude and well regulated internal economy, the hospitals managed by the Grey Nuns are to be specially commended.

The same features, however, which prevent the Edmonton hospital from being a *true general* hospital obtain here and to the same extent limit the usefulness of the institution. Doctors, when they can help it, will not take surgical cases to an hospital where they cannot have the facilities of an up-to-date operating room and strictly asceptic nursing, and these at present are not to be obtained at the Holy Cross. The consequence is, that almost all the surgical work of the district is done at the Calgary General, the work of the Holy Cross being principally of a medical nature. This hospital does not now take in maternity cases either, for the reason adduced in the report on Edmonton Hospital.

It is interesting to note that the Mother Superior of this hospital, which is owned by the same corporation and under the same management as the Edmonton Hospital, does not claim or exercise the right, so freely used by the Mother Superior of the latter institution, to admit patients on her own responsibility.

Three patients in the hospital at the time of my inspection call for mention.

John James Taylor, injury to spine, has been an inmate since July 8. I examined the man carefully and advised his medical attendant to keep him there some time longer.

Gabriel Wolf, an Indian with tuberculosis, has been an inmate since June 10. The Indian department guarantee hospital fees for this patient.

Mary Boher, a little girl admitted January 23, disease, diphtheria. I found this patient on a sofa in a corridor of the second flat of the build-

ing in the midst of the general wards. She had been brought down from the isolated ward the day before, having been there only seven days. The doctor in attendance had not seen the child for a couple of days (it was a mild case and doing well), and the Sisters being ignorant of the fact that the infection of diphtheria does not disappear with the membrane, and being almost ignorant of the provisions of The Public Health Ordinance, had brought the child down to where it was more convenient to look after her. Of course I ordered the child back to the isolated ward at once and gave the necessary directions about disinfection, but it is hardly necessary to say that this is a very grave incident, and one which should not have been possible in an hospital.

An examination of the register and the half-yearly report did not reveal anything calling for special mention.

Report on the Macleod General Hospital.

I beg to report that I visited and inspected the Macleod General Hospital on Friday, Feb. 16, 1899.

There were eleven patients in hospital.

The hospital was clean and in good order, and there were no complaints from the patients as to food, nursing or attendance.

The books were also properly kept and the last half-yearly report corresponded with the register for the period between July 1st and December 31st, 1898.

As this was my first inspection of this hospital, a short history and description of the institution will be in order.

The property is owned and controlled by the corporation of the Macleod General Hospital, constituted by special ordinance in 1888, the directors being elected annually. The hospital was opened for the reception of patients in December, 1896, but it was not until December 1, 1897, that it was placed on the schedule of hospitals entitled to government assistance. At first there was accommodation for five patients in the general ward and for two maternity cases in private wards built specially for that purpose. The whole building was of frame and one storey. The construction of the Crow's Nest Pass Railway necessitated increased accommodation, and the following successive additions were made to the original building. First, a ward was attached at the back to accommodate three patients; then a two storey addition in front consisting of hall, general ward, private ward, bath room and nurses' rooms; and finally a new annex consisting of kitchen, servant's room and private ward.

The hospital can now accommodate:—

General wards.....	13	patients.
Private wards.....	2	"
Maternity wards.....	2	"

a total of seventeen, and is large enough to meet the requirements of the district. It has been crowded to its utmost capacity during the last year and a half owing to railway construction, and has done an immense amount of good work.

The facts that the extensive additions above noted have been made in the short space of two years, that the hospital has been fairly well equipped and that it does not now owe a cent, indicates conservative management, an unusually large number of paying patients, and liberality on the part of the general public. The last again indicates appreciation of the work

done and a sense that the hospital is a necessity and an actual boon to the district in which it is situated.

The most pressing necessities now are a crematory for the destruction of refuse, an operating room and a new water supply. For the latter I would recommend an elevated tank and windmill in connection with a well sunk somewhere near the river.

Incurables.

On the 11th June, 1896, an arrangement was entered into with the board of directors of the Medicine Hat General Hospital under which this institution undertook to care for all incurable patients in the North-West Territories. On the 1st of January, 1898, the following were the incurable patients treated at the Medicine Hat General Hospital: Wm. Bowman, Catherine Mohr and Frederick Ailwood. During the month of May, Frederick Ailwood died, which reduced the number of incurable patients to two. During the early part of the year, however, an application was made to have one Charles Bradford cared for as an incurable, and he was admitted as such on the first of July last, which still leaves the number of incurable patients a charge on the Government, at three. The following is the report of the Inspector of Territorial Hospitals on this matter:

Report on Incurable Patients.

I beg to report as follows on the incurables at present in the Medicine Hat General Hospital:

Charles Bradford, seventy-eight years old, admitted with a history of intestinal hæmorrhage, which, however, has not troubled him since his arrival at Medicine Hat. Apart from a tendency to bronchitis in cold weather and failing mental faculties accompanying the general debility of old age, there is nothing the matter with him.

Wm. Bowman, chronic endocarditis. There is nothing new to record in this case. Some intercurrent disorder will probably remove him before very long.

Catherine Mohr, hæmiphlegia. This is the woman on whom I reported fully in December, 1896, at which time I suggested that as she was an immigrant who had been but a short time in the country, and whose disease had existed prior to her immigration, the Dominion Government might very reasonably be asked to contribute to her support. I am still of that opinion. Her disease has not progressed and her condition is no more favourable than it was. There is no reason why she should not live for thirty years yet, during all of which time she will be a charge upon the Territories.

The case of Alex. Emborg, although not on the list of incurables, is a somewhat similar one, although his disabilities occurred after his coming to the North-West. It will be remembered that this is one of the men on whom I made a special report in October, 1897. He has been an inmate of the hospital ever since, although his disease has not perceptibly advanced.

IMMIGRATION.

Although the question of immigration does not, strictly speaking, come within the jurisdiction of the Territorial Government, the same being administered in behalf of the Territories by the Department of the In-

terior at Ottawa, it might not be out of place to offer a few remarks on the subject.

During the year 2,942 homestead entries were made in the North-West Territories. The Canadian Pacific Railway Company's land sales during the year show an enormous increase over previous years. In 1897, 199,481 acres were disposed of in the West, 67,000 of which were in Assiniboia and Alberta while in 1898 the sales reached the respectable area of 348,627, of which about 160,000 were located in Assiniboia and Alberta.

It is estimated that about one-sixth of the purchasers settled in the country within the year. Arrivals at Winnipeg showed an increase of about 175 per cent over last year's figures.

In view of the scarcity of cheap labour, particularly in the westerly portion of the Territories, and the difficulty thus standing in the way of successful ranching and farming on a limited scale, and of the fact that a very large number of young men in Great Britian would come out to this country without hesitation if they had any assured employment in view, and might thus, in time, become permanent and successful settlers, an arrangement was entered into with the Canadian Government agent at Liverpool under which an employment register was opened in this department where such men could have their applications recorded and would-be employers could be placed in communication with these intending immigrants. The scheme, however, was evolved a little too late in the season to be successfully carried out; but a very large number of applications for employment were received, and the department was the means, during the year, of placing a considerable number of Territorial employers, in want of such labour, in communication with these men. It is hoped that during the coming year the system may be perfected and the department thus become the means of securing for the Territories a large number of able-bodied young men, in some cases in possession of a little capital, and at the same time meet a long felt want for cheap and unskilled labour in some portions of the Territories.

A very considerable number of enquiries were received from persons wishing to emigrate, principally from the United States and Eastern Canada These persons were all supplied with literature, their questions answered and further correspondence invited. In some cases, copies of communications were sent to the Immigration Commissioner at Winnipeg, or to the Department at Ottawa, in order that further information might be sent them.

I cannot leave this subject without a few remarks relative to immigration literature. Shortly after my appointment as Deputy Head, I took steps to gather together all the immigration literature at present being distributed by the Dominion Government and the transportation and land corporations operating in this country. After carefully perusing the same one cannot help but come to the conclusion that while Canada as a whole is fairly well advertised, the space allotted to the North-West Territories is wholly inadequate.

There is not, at present, a single publication in existence dealing entirely with the Territories. The Province of British Columbia has set an example in this matter which might with advantage be emulated by this department. There can be no doubt that attractive immigration literature is the surest means of inducing settlement, providing the same is intelligently distributed. The Dominion Government has an army of immigration agents whose chief duty, I assume, is to bring to the notice of intending immigrants the advantages of Canada as a field for settle-

ment, but the efforts of these men are largely discounted in advance as far as the Territories are concerned, owing to the very inferior material in the way of immigration literature placed at their disposal. It seems almost like paying a skilled labourer an extravagant price for his time, and omitting to furnish him with effective tools. I would most strongly urge that steps be taken during the coming year to prepare an immigration pamphlet descriptive of the North-West Territories. I presume the federal authorities would gladly print and distribute such a pamphlet, providing it did not draw unfavourable comparisons with other provinces, which could easily be avoided. The mere compiling of the manuscript could be done very efficiently and economically in the department with the assistance of local men in the various districts of the country.

DEPARTMENTAL LIBRARY.

The Department of Agriculture being a scientific department, as the work of the same becomes more and more technical, the necessity for an extensive agricultural reference library for the use of its officers becomes more apparent. The most valuable literature in this connection is undoubtedly the reports and bulletins issued by scientific instutions carrying on agricultural investigations. The library of the department at present consists of some 270 volumes in addition to a vast number of special bulletins filed away as received, under the various subjects dealt with.

The department is indebted to the following institutions for valuable literature on agricultural subjects:

Department of Agriculture, Ottawa; Department of Agriculture, Ontario; Department of Agriculture, Manitoba; Department of Agriculture, New Brunswick; Department of Agriculture, British Columbia; Department of Agriculture, Nova Scotia; Department of Agriculture, Sydney, New South Wales; Agricultural Bureau, Adelaide, South Australia; Department of Agriculture, Brisbane, Queensland; Department of Agriculture, Hobart, Tasmania; Department of Agriculture, Wellington, New Zealand; Department of Agriculture, Cape of Good Hope, South Africa; Industrial College, University of Nebraska; Michigan Agricultural College; Montana College of Agriculture; School of Agriculture of the Nevada State University; Kansas State Agricultural College; Iowa State College of Agriculture and Mechanic Arts; Agricultural College of Utah; Department of the State Agricultural College, Colorado; College of Agriculture of Wyoming; College of Agriculture, University of Wisconsin; College of Agriculture, University of Minnesota; South Dakota Agricultural College; Washington Agricultural College; Agricultural Experiment Station, University of Idaho; North Dakota Agricultural College; State Agricultural Society, Hameline, Minn.; Department of Agriculture, Bismark, N.D.; Bureau of Agriculture, Helena, Montana; Department of Agriculture, Washington; Agriculture Experiment Station, Logan, Utah; New York Agricultural Experiment Station, Geneva, New York; Cornell University Experimental Station, Ithaca, New York; Oklahoma Agricultural College, Stillwater, Oklahoma; Oregon State Agricultural College, Corvallis, Oregon; Ohio Agricultural Experiment Station, Columbus, Ohio.

Realising that a very important duty of the department is to keep abreast of new discoveries and developments in the agricultural world, I have studied very closely the agricultural press, and in this manner have

gained a vast amount of useful and valuable information. The following papers and periodicals are at present received in the department:

"Agricultural Gazette," London, England; "Hoard's Dairyman," Wisconsin, U.S.A.; "The Breeder's Gazette," Chicago, Ill., U.S.A.; "The Farmers' Advocate," Winnipeg, Man.; "The Orange Judd Farmer," Chicago, Ill., U.S.A.; "The Irrigation Age," Chicago, Ill., U.S.A.; "Nor'-West Farmer," Winnipeg, Man.; "The Queensland Agricultural Journal," (complimentary); "The Live Stock Journal," London, England; "The Horse Review," Chicago, Ill., U.S.A.; "The Country Gentleman," Albany, N.Y., U.S.A.; "Farming," Toronto; "The Scottish Farmer," Glasgow, Scotland; "Journal of Agriculture and Industry," Adelaide, South Australia (complimentary); "The Agricultural Gazette," Hobart, Tasmania (complimentary); "The Canadian Poultry Review," Toronto; "Deutche Landwirthschaffts Presse," Berlin, Germany; "Tidskrift af Landokonomie," Copenhagen," Denmark; "Nordske Landmandsblad," Christiania, Norway; "Journal D'Agriculture Pratique," Paris, France.

CLERICAL WORK OF THE DEPARTMENT

The volume of work performed in this department during the present year was very considerable, and my sincere thanks are due to every member of the staff for the painstaking manner in which each fulfilled his duties and devoted, during the summer and fall months, almost every evening to keeping abreast of the rapidly increasing correspondence and general work of the department.

During the months of June, July, August, September, October, November and December, 8,511 communications were received and 12,195 communications were sent, in addition to some 3,949 circulars which were mailed from the department in connection with the various Ordinances administered.

CONCLUSION.

In concluding this report, I feel that a few words are necessary in explanation of its voluminous nature. This being the first annual report of the department, I have thought it desirable to include a brief survey, outlining the present condition of our agricultural and pastoral industries, and I have also found it advisable in a great many cases to refer to departmental transactions of former years. It is hoped that future reports may be embodied within more modest limits, but believing, as I do, that the reports of the Department of Agriculture and Statistics should to some extent be looked upon as a record of the agricultural and industrial history of the Territories, and as the present report is intended to form the basis of publications in the future, I found it very difficult to curtail it.

I have the honour to be,

Sir,

Your obedient servant,

CHAS W. PETERSON,

Deputy Commissioner.